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Constant-Dollar Estimates of New Plant and Equipment Expenditures in the United States, 1947–80

THIS article presents quarterly and annual constant-dollar estimates for 1947–80 of new plant and equipment (P&E) expenditures that are companions to the current-dollar estimates compiled from the BEA P&E survey. These estimates substantially extend and improve the information available for analysis of capital expenditures. They, like the current-dollar estimates, cover nonfarm business and are on a company basis.[1] The constant-dollar estimates are obtained by dividing the current-dollar estimates by specially constructed implicit price deflators for industries.

This article has two sections and a technical note. The next section presents the constant-dollar estimates. The second section briefly describes the methodology used to derive the implicit price deflators and the constant-dollar estimates, and introduces the deflators and the fixed-weighted price indexes for each industry. The technical note presents the detailed methodology used to derive the estimates.

Constant-Dollar Estimates of P&E Expenditures

Annual and quarterly constant-dollar (real) estimates of P&E expenditures are shown in table 8. Constant-dollar estimates for equipment and for plant are shown in tables 9 and 10, respectively. The annual estimates are for 1947–80; the quarterly estimates for total P&E expenditures are for 1947–80, and those for equipment and for plant are for 1972–80.

Total P&E expenditures

Chart 6 shows the current- and constant-dollar estimates of total nonfarm business P&E expenditures.[2] From 1947 to 1980, real expenditures grew at an average annual rate of 3.8 percent, compared with 8.2 percent for current-dollar expenditures. The rate of increase in real terms was 2.5 percent in 1947–59, 5.3 percent in 1959–72, and 3.6 percent in 1972–80, compared with 6.2 percent, 7.9 percent, and 11.9 percent, respectively, for current-dollar expenditures.

Table 1 shows the average annual rates of growth by industry for total P&E expenditures for 1947–80, 1947–72, and 1972–80. There were significant differences in the rates of increase among industries. From 1947 to 1980, spending grew faster in nonmanufacturing (4.1 percent) than in manufacturing (3.5 percent). In 1947–72, nonmanufactur-

1. P&E expenditure data are collected from companies, not from establishments. Each company may have one or more establishments, with operations in one or more industries. A single industry classification is assigned to each company based on its primary activity—on the activity with the largest volume of sales or payrolls—and its total expenditure is included in that industry.

Table 1.—Average Annual Rates of Increase for Plant and Equipment Expenditures by Company-Based Industry, Constant 1972 Dollars

[Percent]

	1947–80	1947–72	1972–80
Total nonfarm business	3.8	3.9	3.6
Manufacturing	3.5	3.4	3.9
Durable goods	4.4	3.5	7.3
Primary metals[1]	3.4	1.2	6.2
Blast furnaces	1.6	.8	5.0
Nonferrous metals	4.2	3.5	6.2
Fabricated metals	2.0	2.2	1.4
Electrical machinery	6.8	6.2	8.9
Machinery except electric	5.3	4.2	9.1
Transportation equipment[1]	5.4	3.8	10.2
Motor vehicles	3.5	2.8	5.8
Aircraft	12.2	8.7	23.9
Stone, clay and glass	3.0	2.4	5.1
Other durables[2]	3.5	4.7	.9
Nondurable goods	2.7	1.8	4.6
Food and beverage	1.6	1.5	2.2
Textiles	-.9	-.2	-2.6
Paper	4.6	2.1	12.2
Chemicals	3.2	1.6	8.9
Petroleum	2.7	1.6	5.1
Rubber	3.3	3.3	-1.2
Other nondurables[3]	2.7	2.1	5.5
Nonmanufacturing	4.1	4.3	3.2
Mining	3.3	2.6	7.8
Transportation	.8	1.4	-1.1
Public utilities	4.6	6.1	.9
Trade and services	4.4	5.1	2.1
Wholesale and retail trade	3.7	3.1	1.3
Finance, insurance, and real estate	6.3	7.0	4.2
Personal, business and professional services	4.3	5.5	.7
Communications and other	4.8	5.7	2.1
Communications	5.9	6.4	4.4
Other[4]	2.8	4.6	-2.9

1. Includes industries not shown separately.
2. Consists of lumber, furniture, instruments, and miscellaneous.
3. Consists of apparel, tobacco, leather, and printing-publishing.
4. Consists of construction; social services and membership organizations; and forestry, fisheries, and agricultural services.

2. Unless otherwise noted, all references to P&E expenditure estimates in this article are to estimates in constant (1972) dollars, all quarterly data are seasonally adjusted at annual rates, and all percentages are average annual rates of change.

CHART 6

Expenditures for New Plant and Equipment by U.S. Nonfarm Business

Billion $ (Ratio scale)

Constant (1972) $

Current $

Seasonally Adjusted at Annual Rates
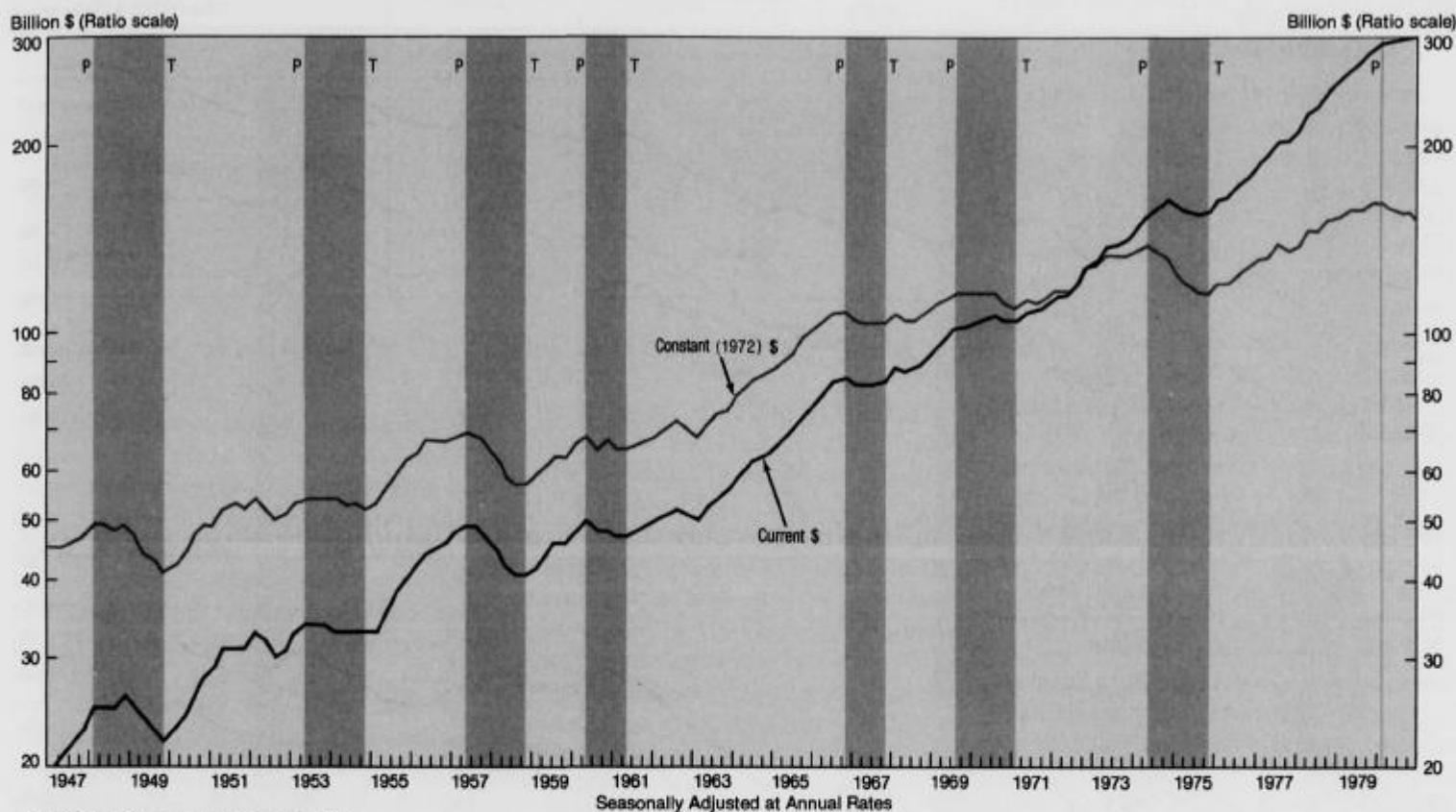
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ing grew faster (4.8 percent) than did manufacturing (2.4 percent), but in 1972–80 manufacturing grew much faster (6.9 percent) than did nonmanufacturing (1.9 percent).

Manufacturing.—For 1947–80, aircraft showed the fastest average annual growth in P&E spending (12 percent), followed by electrical machinery (7 percent) and nonelectrical machinery (5 percent). The growth of aircraft industry expenditures was marked by a series of sudden increases and decreases in response to military and commercial demands for new aircraft. The first major boom occurred in early 1951 in response to demand related to the Korean War. Large increases in 1955, 1956, 1962, 1968, and 1978 occurred in response to commercial demand and, in 1965 and 1966, in response to military demand. In the past 3 years, the industry registered a dramatic increase in P&E spending. This increase—over 200 percent from the fourth quarter of 1977 to the first quarter of 1980—reflected

steady growth in demand for more efficient commercial aircraft by major airlines, commuter planes, and private company aircraft. The only manufacturing industry that registered a decline in spending in 1947–80 was textiles, where spending declined an average of 1 percent per year.

For 1972–80, the fastest growth among manufacturing industries was in aircraft (24 percent), followed by paper (12 percent). Nonelectrical machinery, chemicals, and electrical machinery each grew at a 9-percent rate. The growth rate for aircraft reflected a trough in spending during 1972 and the large spurt during 1977–80. The fast increase by paper occurred primarily in 1972–74 and 1979–80. Textiles and rubber were the only industries with spending declines in 1972–80. Both textiles and rubber curtailed spending during the 1974–75 recession. For textiles, spending fell by 29 percent from 1974 to 1975, but increased at a 5-percent rate from 1975 to 1980.

Nonmanufacturing. — The industry groups with the fastest growth in P&E spending in 1947–80 were finance-insurance-real estate and communications (6 percent), and public utilities (5 percent). Transportation had the slowest growth (1 percent). In all nonmanufacturing industry groups except mining, growth rates were slower in 1972–80 than in 1947–80. The slowing was particularly marked in services, which grew at less than a 1-percent rate in 1972–80 compared with 5.5 percent in 1947–72, and in "other" (construction, social services and membership organizations, and forestry, fisheries, and agricultural services), which fell at a rate of 3 percent, compared with an increase of over 4 percent in 1947–72. P&E spending in mining increased in 1972–80 at a rate of 8 percent, double the rate in 1947–80, mainly reflecting the desire of companies for capacity to respond to demand for domestically produced energy.

CHART 7

Expenditures for New Plant and for New Equipment by U.S. Nonfarm Business
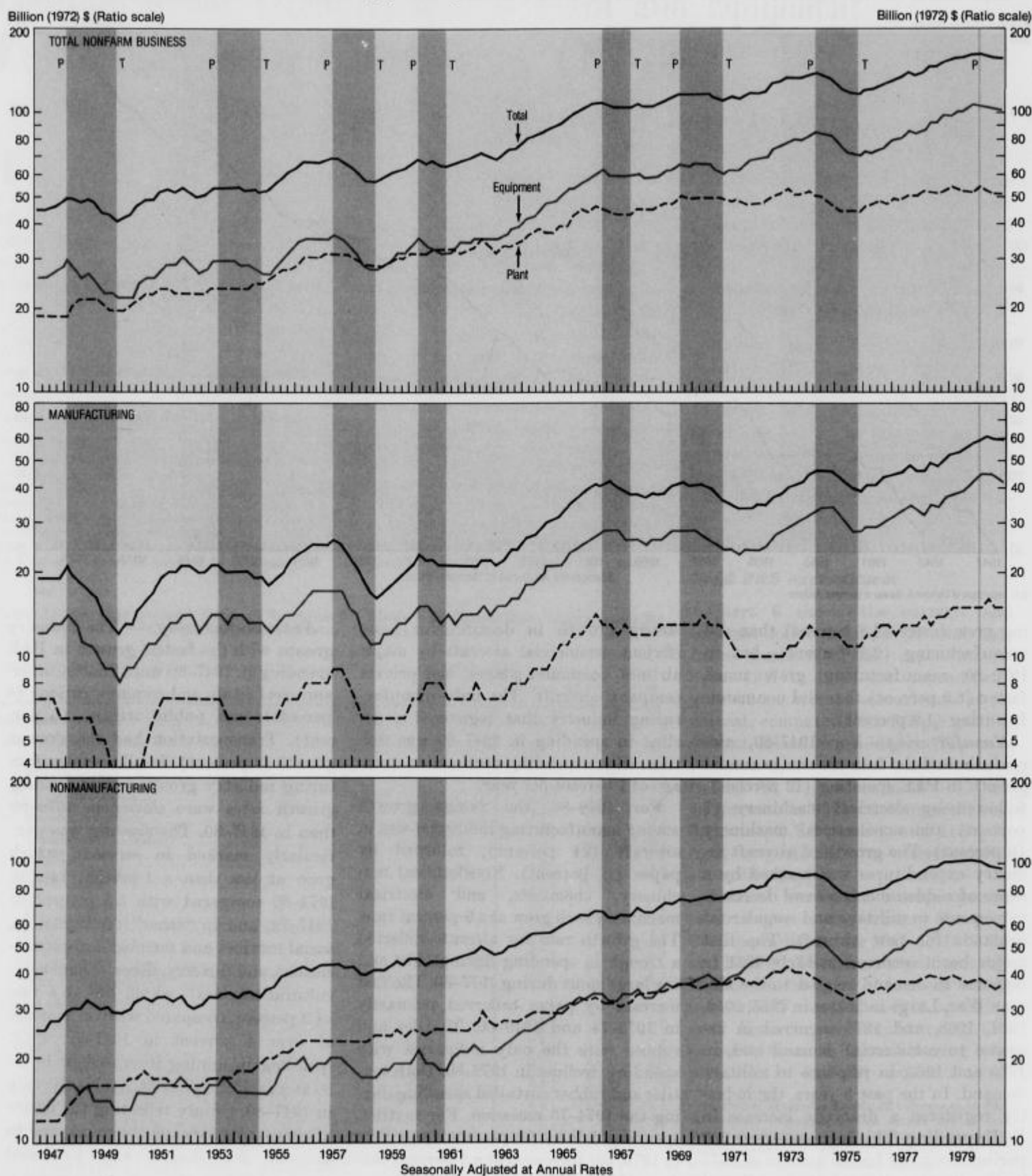

Billion (1972) $ (Ratio scale)

TOTAL NONFARM BUSINESS

Total

Equipment

Plant

MANUFACTURING

NONMANUFACTURING

Seasonally Adjusted at Annual Rates

1947 1949 1951 1953 1955 1957 1959 1961 1963 1965 1967 1969 1971 1973 1975 1977 1979

U.S. Department of Commerce, Bureau of Economic Analysis

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Table 2.—Average Annual Rates of Increase for Plant and for Equipment Expenditures by Company-Based Industry, Constant 1972 Dollars

[Percent]

	1947–80		1947–72		1972–80	
	Plant	Equipment	Plant	Equipment	Plant	Equipment
Total nonfarm business	3.2	4.2	4.0	4.0	0.9	5.1
Manufacturing	2.5	3.9	1.6	2.8	5.4	7.5
Durable goods	3.8	4.6	2.9	3.9	5.8	4.8
Nondurable goods	1.7	3.2	1.3	1.7	2.8	8.2
Nonmanufacturing	3.5	4.5	4.0	4.5	−.5	5.7
Mining	5.8	3.7	5.3	1.0	7.4	8.2
Transportation	.6	.5	−.1	1.8	3.3	−2.3
Public utilities	4.2	5.9	5.1	7.0	1.7	−.2
Trade and services	3.2	5.1	5.8	5.2	−2.5	5.8
Communications and other	2.6	5.5	5.0	6.1	−1.1	3.7

Expenditures for plant and for equipment

Table 2 shows average annual rates of increase for plant and for equipment expenditures for major industry groups. Chart 7 shows P&E, equipment, and plant expenditures for total nonfarm business, manufacturing, and nonmanufacturing. Total nonfarm business expenditures for equipment grew considerably faster than those for plant, especially in recent years. For 1947–80, the growth rate for equipment spending was 4.2 compared with 3.2 percent for plant spending. From 1972–80, equipment spending increased at a rate of 5.1 percent, compared with only 0.9 percent for plant spending. Faster growth in equipment spending occurred in both manufacturing and nonmanufacturing. The large difference in growth rates for recent years may have reflected a response to large differences in price increases for the two components—in 1972–80 the implicit price deflator for plant rose at a rate of 10.5 percent com-

pared with a rate of 6.7 percent for equipment.[3]

In 1972–80, the faster growth of equipment in manufacturing was traceable to nondurable goods manufacturing. In nonmanufacturing, plant spending declined. Substantial declines occurred in trade and services and in the communication and other group. These declines were partly offset by the strong growth in mining and in transportation. The latter reflected large outlays for the construction of the Alaskan pipeline.

Cyclical behavior

During the period 1947 to 1980, total P&E, equipment, and plant expenditures for major industry groups showed significant cyclical patterns (chart 7). The shaded areas in each chart depict periods between successive peaks (P) and troughs (T)—"contractions"—for

real total nonfarm P&E expenditures.[4] The percentage changes for five major industry groups in each of the seven cycles that occurred during this period are shown in table 3 for contractions and for expansions.[5]

There were three large contractions in spending for total nonfarm business: from 1957:2–1958:4, spending fell 16½ percent; from 1948:1–1949:4, it fell 16 percent; and from 1974:2–1975:4, it fell 15 percent. The other four contractions were relatively mild, averaging 4 percent.

The expansion with the largest growth in total nonfarm business spending was 1961:2–1966:4 (the longest of the expansions), when spending increased 67 percent. Other expansions with large growth were 1975:4–1980:1, 39 percent; 1949:4–1953:2, 31 percent; and 1954:4–1957:2, 32 percent.

P&E spending in manufacturing generally registered much larger spending declines in contractions and substantially larger increases in expansions than did nonmanufacturing spending. In contractions, the average decrease for manufacturing was almost five times as large as that for nonmanufacturing; in expansions, the average increase for manufacturing was almost twice that for nonmanufacturing. Within manufacturing, durable goods industries were somewhat more cycli-

3. Strictly speaking, fixed-weighted price indexes should have been used to support this reasoning. The rates of growth of these indexes were similar to the rates for the deflators (see table 5).

4. These peaks and troughs do not coincide with the business cycle peaks and troughs designated by the National Bureau of Economic Research.

5. The percentage changes in table 3, and those discussed in this part, are not at average annual rates (see footnote 2), but are changes over the entire period indicated.

Table 3.—Percent Change in Expenditures for Equipment and for Plant, Contractions and Expansions, 1947–80

	Contractions								Expansions						
	48:1–49:IV	53:II–54:IV	57:III–58:III	60:II–61:II	66:IV–67:III	69:III–71:I	74:II–75:IV	Average	49:IV–53:II	54:IV–57:II	58:III–60:II	61:II–66:IV	67:III–69:III	71:I–74:II	75:IV–80:I	Average
Total nonfarm business	−16.31	−3.49	−16.49	−4.70	−4.34	−6.12	−15.29	−9.39	30.71	31.61	15.37	66.89	12.49	34.45	38.82	31.82
Equipment	−37.36	−0.77	−23.57	−10.06	−4.69	−7.01	−17.09	−14.84	39.22	34.29	25.57	94.80	10.47	41.85	50.08	42.85
Plant	.43	4.49	−8.47	2.41	−3.63	−1.89	−11.21	−2.54	21.27	28.06	8.61	30.83	15.23	3.15	30.30	19.54
Manufacturing	−39.18	−5.66	−34.35	−6.91	−7.26	−14.69	−26.69	−18.32	68.73	35.07	39.04	95.16	4.12	38.34	53.71	46.75
Equipment	−40.68	−9.14	−37.06	−11.23	−9.07	−16.69	−26.70	−20.00	65.13	33.73	44.69	105.87	9.04	41.35	50.76	51.79
Plant	−35.73	−7.72	−32.70	2.17	−3.54	−10.08	−10.78	−14.53	60.97	37.81	26.31	78.15	0.89	2.00	56.25	30.77
Durable goods	−28.03	−8.77	−40.95	−12.88	−5.69	−22.03	−22.62	−21.55	103.30	40.04	49.95	128.88	0.87	37.06	70.94	63.24
Equipment	−35.41	−4.37	−40.59	−13.92	−3.91	−23.42	−24.45	−21.00	58.01	37.55	56.82	127.13	6.80	46.32	66.36	62.01
Plant	−45.74	−22.10	−41.85	−8.96	−8.09	−18.11	−15.95	−22.70	147.90	74.90	32.48	133.76	8.54	7.47	70.42	68.97
Nondurable goods	−30.82	−5.60	−21.75	−1.16	−9.39	−5.90	−6.61	−14.76	43.68	25.32	24.44	66.37	13.77	19.76	37.04	33.71
Equipment	−44.12	−13.70	−34.37	−7.93	−12.69	−7.46	−6.40	−18.10	47.10	29.62	32.27	83.65	14.54	33.04	52.50	41.84
Plant	−31.17	.38	−27.48	0.35	−1.97	−3.72	−7.03	−9.06	37.74	18.04	55.75	43.75	12.44	−.03	8.00	20.90
Nonmanufacturing	.82	−.26	−4.68	−3.59	−2.49	.29	−15.29	−3.73	16.50	29.42	10.15	53.12	14.60	22.68	31.22	25.18
Equipment	−14.93	−10.31	−11.34	−16.58	−2.30	−.51	−18.33	−9.78	22.65	34.79	18.70	60.03	10.89	42.17	44.17	37.05
Plant	17.60	8.33	.91	2.69	−2.73	1.10	−11.39	2.47	9.43	24.01	3.80	26.97	17.31	3.30	15.10	14.78

CHART 8

Business Equipment (Index of Industrial Production) and Constant-Dollar Equipment Expenditures (P&E Survey)

Index, 1967 = 100
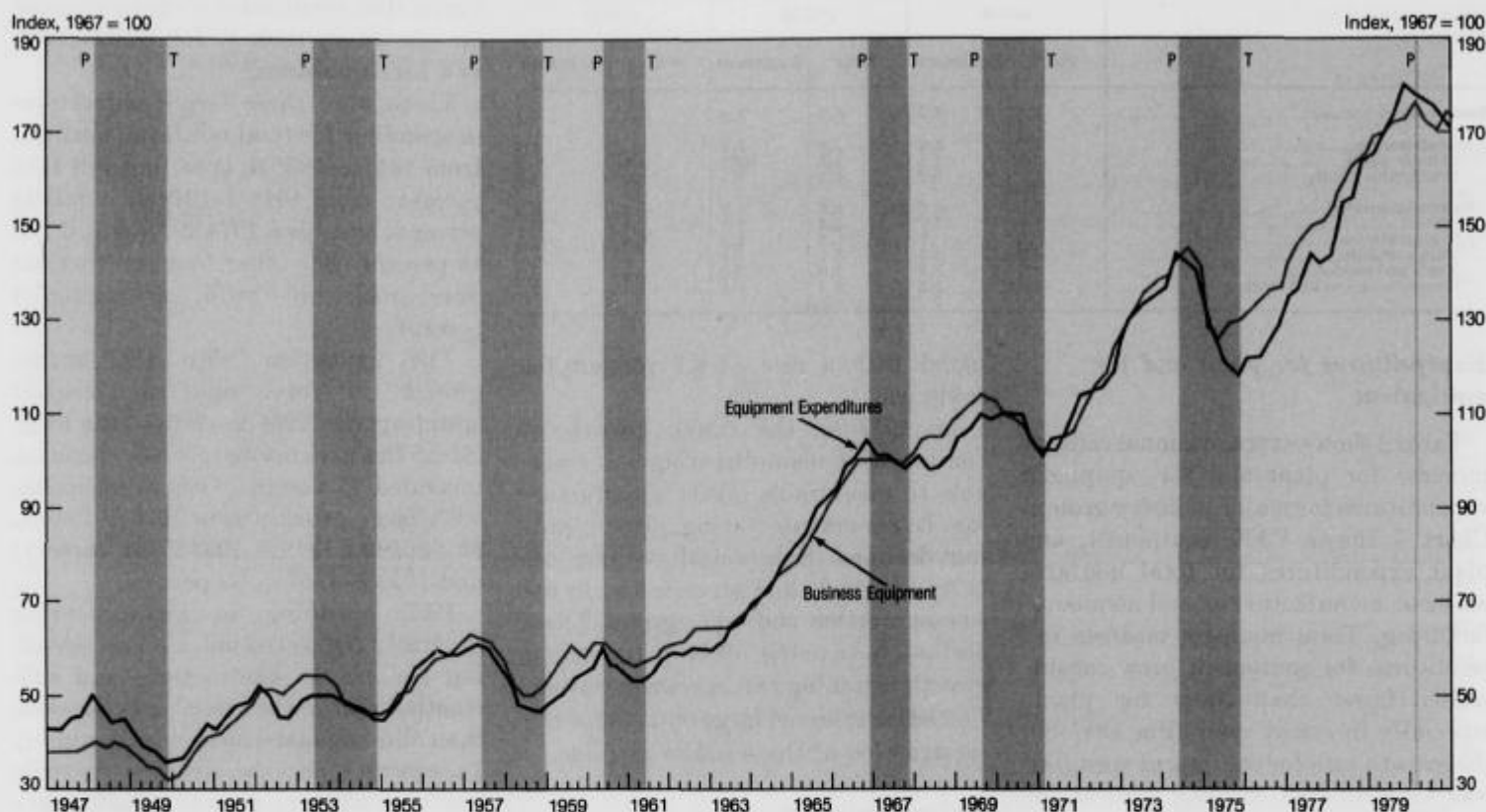
U.S. Department of Commerce, Bureau of Economic Analysis

cally sensitive than nondurable goods industries, especially in the 1960:2–1961:2, 1969:3–1971:1, and 1974:2–1975:4 contractions, and the 1949:4–1953:2, 1961:2–1966:4, and 1975:4–1980:1 expansions.

Table 3 also shows that equipment spending was more cyclically sensitive than plant spending. In fact, plant expenditures increased in the contractions of 1948:1–1949:4, 1953:2–1954:4, and 1960:2–1961:2.

The timing of troughs for manufacturing and nonmanufacturing spending was slightly different. The troughs in manufacturing usually lagged those for total nonfarm business by one to two quarters, and nonmanufacturing spending turned up one or two quarters before the troughs for total nonfarm business. The peak quarters of manufacturing and nonmanufacturing were more coincident.

Comparison with the FRB series

The constant-dollar estimates of equipment expenditures can be com-

pared with the business equipment component of the Index of Industrial Production, prepared by the Federal Reserve Board (FRB). The FRB series differs in several ways from the BEA series; data are not available to make satisfactory adjustments for these differences.[6]

Chart 8 shows the two series indexed to 1967. The two series moved together for most of the 1947–80 period—the correlation coefficient of the quarterly levels of the index numbers is 0.995, and the correlation of the percent changes is 0.668. The FRB series grew at a somewhat faster rate over 1947–80—4.7 percent, compared to 4.2 percent for the BEA series.

In the last five expansions the FRB series was consistently above the BEA

6. The major differences between the FRB series and the BEA series are: (1) The FRB series is based mainly on production data; the BEA series measures expenditures. (2) The FRB series includes government, exports, and agriculture; the BEA series excludes these items (although it includes imports). (3) The FRB series is compiled from establishment data; the BEA series is compiled from company data.

series. In part, this reflected the fact that the troughs in the FRB series generally preceded the troughs in the BEA series by one or two quarters. (The timing differences at peaks were less uniform.) The FBR series is based mainly on production measures, rather than on expenditures. Because production normally precedes expenditures, this difference may have accounted for the fact that the troughs in the FRB series generally preceded those in the BEA series.

The BEA series showed a much steeper decline in the 1974–75 contraction and faster growth in the recent expansion than did the FRB series. The FRB series peaked in the first quarter of 1980 and fell rapidly in the next two quarters before turning up in the fourth quarter of 1980. The BEA series peaked in the fourth quarter of 1979, and then fell more gently than did the FRB series.

Industry Price Measures

This section is divided into five parts. The first part summarizes the method-

ology used to derive the specially constructed implicit price deflators and the constant-dollar estimates presented above. The second and third parts present the implicit price deflators for expenditures by establishment-based industry, and for P&E expenditures by company-based industry. The fourth and fifth parts compare the implicit price deflators with fixed-weighted price indexes and with annual price data collected from respondents to the P&E survey.

Summary of methodology

The procedure used to prepare quarterly implicit price deflators and the constant-dollar estimates is carried out separately for plant expenditures and for equipment expenditures. The basic inputs are national income and product account (NIPA) estimates for purchases of structures and producers' durable equipment by type in current and constant dollars (published as NIPA tables 5.4–5.7) adjusted, where possible, to conform to P&E survey definitions.[7]

In the first of three steps, specially prepared capital flow matrixes are used to transform the NIPA estimates into current- and constant-dollar expenditures by establishment-based industry. These capital flow matrixes show the amounts and types of capital goods used for each of 76 establishment-based industries. The step-one calculations yield implicit price deflators for establishment-based industries that are formed by dividing current-dollar capital expenditures by constant-dollar capital expenditures for each establishment industry.

The second step uses a capital expenditures matrix to transform the capital expenditures by establishment-based industry into capital expenditures by company-based industry. The capital expenditures matrix shows the amount of capital expenditures in each company-based industry distributed by the industry classification of its estab-

lishments. Company-based industry deflators are formed by dividing current-dollar capital expenditures by constant-dollar capital expenditures for each industry. The derived company-based industry deflators allow for the different compositions of capital goods expenditures among industries.

In step three, the company-based industry deflators for plant and for equipment are subjected to a constraint and then applied to the current-dollar expenditures from the P&E survey to form the final constant-dollar estimates. The constraint insures that the weighted sum of deflators for the P&E survey

7. For a summary of the differences in definitions between P&E survey expenditure estimates and the NIPA estimates for purchases of structures and producers' durable equipment, see G. R. Green and M. P. Hertzberg, "Revised Estimates of New Plant and Equipment Expenditures in the United States, 1947–77," SURVEY OF CURRENT BUSINESS 60 (October 1980): 36–39.

Table 4.—Average Annual Rates of Increase for Implicit Price Deflators and Fixed-Weighted Price Indexes for Expenditures by Establishment-Based Industry

[Percent]

	1947–80		1972–80		Rank [1]	
	Implicit price deflator	Fixed-weighted price index	Implicit price deflator	Fixed-weighted price index	1947–80	1972–80
Crude petroleum and natural gas	5.6	5.5	16.5	15.2	1	1
Coal mining	6.4	6.3	10.7	10.6	2	2
Stone, clay mining, quarry mining, and chemicals and fertilizer mineral mining	5.0	4.9	10.0	10.0	3	3
Broad and narrow fabrics, yarn, and thread mills and miscellaneous textile goods	5.0	4.9	8.1	0.7	4	8
Rubber and miscellaneous plastic products	4.9	4.8	8.5	0.3	5	12
Iron and ferroalloy ores mining and nonferrous metal ores mining	4.9	4.9	8.8	8.8	5	4
Lumber and wood products including wooden containers	4.9	4.9	9.1	9.4	7	5
Paperboard containers and boxes	4.8	4.9	8.3	8.0	8	21
Electric, gas, water, and sanitary services	4.9	5.0	9.2	9.0	9	7
Motor vehicles and equipment	4.8	5.0	8.8	9.2	10	10
Construction	4.8	4.9	9.2	9.7	11	5
Metalworking machinery and equipment	4.8	4.6	8.2	8.5	12	24
Heating, plumbing, and structural metal products	4.7	4.4	8.5	8.6	13	19
Screw machine products and stampings	4.7	4.5	8.3	8.6	14	20
Other furniture and fixtures	4.7	4.5	8.5	8.6	15	13
Tobacco manufactures	4.7	4.2	8.4	8.7	16	18
Household furniture	4.6	4.4	8.5	9.0	17	14
Primary nonferrous metals manufacturing	4.6	4.1	8.2	8.6	18	23
Metal containers and other fabricated metal products	4.5	4.4	8.2	8.7	19	27
Glass and glass products	4.6	4.3	7.6	8.5	20	41
Miscellaneous machinery, except electrical	4.6	4.1	7.6	8.2	21	40
Primary iron and steel manufacturing	4.6	4.3	8.2	8.7	22	29
General industrial machinery and equipment	4.6	4.2	7.7	8.3	23	37
Stone and clay products	4.6	4.5	8.4	8.0	24	17
Paper and allied products except containers	4.6	4.3	8.1	8.8	25	31
Electric lighting and wiring equipment	4.6	4.6	8.1	8.0	26	16
Miscellaneous fabricated textile products	4.6	4.0	7.7	8.5	27	35
Apparel	4.6	4.4	8.1	9.2	28	22
Miscellaneous manufacturing	4.5	4.3	7.9	8.5	29	34
Farm and garden machinery	4.5	4.3	7.0	8.1	30	39
Transportation and warehousing	4.5	4.3	8.7	9.2	31	11
Chemicals, selected chemical products, plastics, and synthetic materials	4.5	4.3	8.0	8.7	32	32
Food and kindred products	4.5	4.0	8.3	8.0	33	26
Household appliances	4.5	4.3	8.2	8.7	34	20
Agriculture	4.5	4.0	8.3	9.4	35	6
Special industry machinery and equipment	4.5	4.3	8.0	8.6	36	33
Petroleum refining and related industries	4.5	4.3	8.4	8.9	37	15
Printing and publishing	4.5	4.2	7.2	8.0	38	44
Engines and turbines	4.4	5.0	6.6	7.6	39	52
Service industry machines	4.4	4.2	7.7	8.4	40	35
Optical, ophthalmic, and photographic equipment	4.3	3.6	6.6	7.8	41	50
Construction, mining, and materials handling machinery and equipment	4.3	4.1	7.3	8.1	42	40
Other transportation equipment	4.3	4.3	8.1	8.6	42	20
Leather tanning and finishing, footwear, and other leather products	4.3	3.6	6.9	7.9	44	48
Total all industries combined	4.3	4.2	8.1	8.7	45	36
Paints and allied products	4.2	3.6	6.6	7.7	46	61
Electrical industrial equipment and apparatus and miscellaneous electrical equipment	4.2	4.0	7.3	8.1	47	42
Electronic components and accessories	4.2	4.1	7.3	8.4	48	43
Drugs, cleaning, and toilet preparations	4.1	3.8	6.6	7.7	49	51
Scientific and controlling instruments	4.1	3.3	6.6	7.8	50	49
Office, computing, and accounting machines	3.9	3.0	7.2	8.0	51	45
Radio, television, and communication equipment	3.8	3.7	6.6	7.7	52	55
Aircraft and parts and ordnance and accessories	3.7	3.0	6.7	7.2	53	54
Wholesale and retail trade	3.6	3.6	7.6	8.3	54	28
Services	3.6	3.6	7.1	8.1	55	47
Communications	3.3	3.4	5.4	6.0	56	57
Finance, insurance, real estate and rental	2.9	2.9	5.0	6.7	57	56

1. Rank is based on implicit price deflators.

industries is equal to the deflator for total purchases of equipment and structures obtained from the sums of the adjusted NIPA estimates.

Implicit price deflators for establishment-based industries

Table 4 shows the average annual rates of increase of implicit price deflators for capital expenditures by establishment-based industry. An establishment-based industry that purchases mainly capital goods that show relatively fast price increases over time will, in all likelihood, also show relatively fast increases in its deflators. For example, the establishment-based industry that had the fastest increase in the deflator in 1947–80 was crude petroleum and natural gas. The rate of the deflator's increase reflected that industry's purchase of about 34 percent of mining and oilfield machinery in 1972 and of all petroleum and natural gas structures, which both showed relatively fast price increases.

Four of the six industries with the fastest increases in 1947–80 were mining industries. Broad and narrow fabrics, yarn, and thread mills and miscellaneous textile goods had the fastest increase for nonmining industries, followed by the rubber and miscellaneous plastic products and the lumber and wood products including wooden containers industries. The fast increase in the deflator for the broad and narrow fabrics, etc. industry was due to the industry's heavy purchases of special industry machinery, which increased rapidly in price over the 1947–80 period. Large purchases of special industry machinery were a factor for the other two industries also. The rubber and miscellaneous plastic products industry purchased, in addition, a large amount of metalworking machinery, which increased rapidly in price, and the lumber and wood products industry purchased, in addition, a large amount of trucks, which increased rapidly in price.

Similarly, industries that purchased large amounts of office, computing, and accounting machinery, the equipment category with the slowest increase in the deflator over 1947–80, showed relatively slow increases in their deflators. The two major purchasers of this equipment category were the finance-insurance-real estate, and rental industry and the services industry.

Implicit price deflators for company-based industries

The implicit price deflator for P&E expenditures by a company-based industry is in effect a weighted average of the deflators for the establishments owned by the companies in that industry. For example, 70 percent of P&E spending in 1972 by food and beverage companies was by their establishments classified in the food and kindred products industry. Food and beverage companies also owned establishments classified in metal containers and other fabricated metal products. Because the deflators for these establishment-based industries increased more than the average for all industries combined, the deflators for food and beverage companies also showed an above-average increase.

Table 5 shows average annual rates of increase of implicit price deflators for total P&E expenditures by company-based industry for 1947–80, 1947–72, and 1972–80. The implicit price deflator for total nonfarm business P&E expenditures increased at a 4.2-percent rate in 1947–80. Reflecting the generally higher inflation of the seventies, the deflators for total nonfarm business and for every industry increased much faster in 1972–80 than in 1947–72; the rate of increase in the deflator for total nonfarm business in 1972–80 was 8.1 percent, compared with 3.0 percent in 1947–72. The deflator for manufacturing increased somewhat faster than that for nonmanufacturing in both periods.

Within manufacturing, the deflator for nondurable goods increased faster than that for durable goods, especially in 1972–80, reflecting mainly a fast in-

Table 5.—Average Annual Rates of Increase for Implicit Price Deflators and for Fixed-Weighted Price Indexes for Plant and Equipment Expenditures by Company-Based Industry

[Percent]

	1947–80		1947–72		1972–80	
	Implicit price deflator	Fixed-weighted price index	Implicit price deflator	Fixed-weighted price index	Implicit price deflator	Fixed-weighted price index
Total Nonfarm Business	4.2	4.2	3.0	2.9	8.1	8.7
Manufacturing	4.5	4.4	3.3	2.9	5.5	5.3
Durable goods	4.4	4.3	3.3	2.9	7.9	8.5
Primary metals [1]	4.6	4.4	3.9	2.9	8.5	8.9
Blast furnaces	4.6	4.3	3.9	2.9	8.9	8.8
Nonferrous metals	4.7	4.4	3.9	2.9	8.9	9.1
Fabricated metals	4.0	4.4	3.5	2.7	8.1	8.9
Electrical machinery	4.0	3.9	3.0	2.7	7.0	7.9
Machinery except electric	4.3	4.1	3.3	2.8	7.5	8.2
Transportation equipment [1]	4.8	4.6	3.6	2.3	8.3	8.0
Motor vehicles	4.6	4.7	3.4	2.4	8.5	8.9
Aircraft	4.3	4.2	3.7	2.7	8.1	9.0
Stone, clay and glass	4.6	4.4	3.4	3.0	8.6	9.0
Other durables [2]	4.5	4.3	3.4	2.9	8.1	8.9
Nondurable goods	4.6	4.6	3.2	2.9	9.0	10.4
Food including beverage	4.4	4.3	3.2	3.0	8.7	9.9
Textiles	4.7	4.6	3.5	3.1	8.4	9.5
Paper	4.5	4.3	3.4	3.0	8.0	8.6
Chemicals	4.5	4.3	3.3	2.8	8.3	8.9
Petroleum	4.9	5.1	3.0	2.8	10.9	12.5
Rubber	4.6	4.6	3.5	3.2	8.2	9.1
Other nondurables [3]	4.4	4.1	3.4	2.8	7.6	8.9
Nonmanufacturing	4.0	4.1	2.9	2.7	7.5	8.5
Mining	5.4	5.2	3.2	3.1	12.4	13.2
Transportation	4.5	4.3	3.1	2.9	8.0	9.1
Public utilities	4.6	4.3	3.4	3.4	9.2	9.4
Trade and services	3.7	3.8	2.6	2.6	7.1	8.3
Wholesale and retail	3.7	3.8	2.6	2.6	7.0	8.2
Finance, insurance, and real estate	3.7	3.8	2.6	2.9	6.7	8.5
Personal, business and professional services	3.7	3.8	2.6	2.5	7.1	8.1
Communication and other	3.7	3.8	2.8	2.7	6.5	7.0
Communication	3.3	3.3	2.6	2.5	5.5	5.0
Other [4]	4.5	4.7	3.1	3.2	8.3	9.8

1. Includes industries not shown separately.
2. Consists of lumber, furniture, instruments, and miscellaneous.
3. Consists of apparel, tobacco, leather, and printing-publishing.
4. Consists of construction; social services and membership organizations; and forestry, fisheries, and agricultural services.

Table 6.—Average Annual Rates of Increase for Implicit Price Deflators for Plant and for Equipment Expenditures by Company-Based Industry

[Percent]

	1947–80		1947–72		1972–80	
	Plant	Equipment	Plant	Equipment	Plant	Equipment
Total nonfarm business	5.6	3.5	3.2	2.8	10.5	5.7
Manufacturing	6.1	4.3	3.1	3.3	11.3	7.4
Durable goods	4.8	4.3	2.3	3.4	10.1	7.2
Nondurable goods	5.3	4.3	3.1	3.3	12.3	7.8
Nonmanufacturing	5.0	3.3	3.4	3.4	10.1	6.2
Mining	8.9	4.8	3.1	3.3	15.2	9.5
Transportation	4.9	4.8	3.4	3.0	9.0	8.5
Public utilities	5.4	3.5	3.6	3.2	10.3	7.6
Trade and services	4.7	2.8	3.2	3.0	9.6	6.5
Communication and other	4.6	3.2	3.3	2.5	8.9	8.4

crease in the deflator for petroleum companies. This fast increase in turn reflected these companies' ownership of establishments in the crude petroleum and natural gas industry whose deflator, as seen in table 4, increased very fast; of the equipment expenditures in 1972 made by this establishment-based industry, 68 percent were accounted for by establishments owned by petroleum companies. The manufacturing industries with the slowest deflator increases in 1947–80 were aircraft and electrical machinery. Aircraft companies own many establishments classified in aircraft and parts, and the deflator for

Table 7.—Comparison of Percent Changes in Implicit Price Deflators for Plant and Equipment Expenditures and in Capital Goods Prices Reported in the P&E Survey

	Correlation coefficient
Total nonfarm business	0.878
Manufacturing	.778
Durable goods	.792
Blast furnaces	.847
Nonferrous metals	.800
Electrical machinery	.534
Machinery except electric	.802
Motor vehicles	.500
Aircraft	.540
Stone, clay, and glass	.763
Other durables[1]	.752
Nondurable goods	.802
Food including beverages	.825
Textiles	.601
Paper	.814
Chemicals	.704
Petroleum	.745
Rubber	.850
Other nondurables[2]	.783
Nonmanufacturing	.013
Mining	.810
Transportation	.825
Public utilities	.900
Trade and services[3]	.880
Communications	.659

1. Consists of fabricated metals, lumber, furniture, instruments, and miscellaneous.
2. Consists of apparel, tobacco, leather, and printing-publishing.
3. Includes other nonmanufacturing.

this establishment-based industry increased relatively slowly in 1947–80. (The deflator for aircraft and parts establishments increased slowly because a large portion of this industry's capital expenditures is office, computing, and accounting machinery.) The deflator for electrical machinery companies increased relatively slowly because they own many establishments in four establishment-based industries for which the deflators increased relatively slowly—communications; radio, television, and communication equipment; electronic components and accessories; and electrical industrial equipment and apparatus and miscellaneous electrical equipment.

For nonmanufacturing, the mining industry deflator showed the fastest increase for all periods shown in table 5. The increase in that company-based industry's deflator reflected the relatively fast increase in the deflators for mining-related establishment-based industries.[8] The deflator for transportation companies increased rapidly in 1947–80 re-

8. These industries are iron and ferroalloy ores mining and nonferrous metal ores mining; coal mining; crude petroleum and natural gas; and stone, clay mining, quarry mining, and chemicals and fertilizer mineral mining.

flecting the rapid increase, especially in 1972–80, in the deflator for transportation establishments. This increase in turn reflected increases in prices for railroad equipment and railroad structures and for aircraft. The deflator for public utilities increased rapidly, reflecting the fast increase in the deflator for electric, gas, water, and sanitary services. The deflator for other nonmanufacturing also increased rapidly, mainly due to the increase in the deflator for the construction industry component.

Rates of increase of deflators for plant expenditures and for equipment expenditures for major industry groups are shown in table 6. The deflators for plant expenditures increased faster than for equipment expenditures, especially for 1972–80. Mining and nondurable goods manufacturing showed the largest differences between the rates of increase in the deflator for plant and that for equipment. The large differences in mining reflected mainly a fast increase in the price of petroleum structures (mostly oil drilling related).

Fixed-weighted price indexes

The implicit price deflators discussed above reflect both changes in prices for capital goods and shifts in the composition of expenditures for these goods. Fixed-weighted price indexes reflect changes in prices for a fixed "market basket" of capital goods. In constructing the fixed-weighted price indexes for each industry, all factors that could change the composition of capital goods are held at their 1972 values. The factors held constant are: the constant-dollar amount of each type of capital good, the two transformation matrixes,

the industry ratios of equipment to structures, and the industry weights for various industry groupings (e.g., durable goods manufacturing).

In 1972–80, the implicit price deflators increased at slower rates than the corresponding fixed-weighted price indexes for most establishment-based industries (table 4). This difference reflected a shift in mix away from capital goods that were relatively more expensive to those that were relatively less expensive. The notable exception to this pattern was for the industry with the fastest implicit price deflator increase—crude petroleum and natural gas. This industry's expenditures were dominated by the relatively more expensive petroleum structures and the increasing proportion of investment accounted for by plant in this industry.

Table 3.—New Plant and Equipment Expenditures by U.S. Nonfarm Business

[Billions of

Line		1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
1	Total nonfarm business	45.75	40.97	41.92	45.63	51.45	54.07	53.95	53.25	57.46	64.33	67.44	59.25	61.84	64.49	65.35	70.05
2	Manufacturing	19.48	20.69	14.07	14.34	18.93	20.37	20.48	19.07	19.90	24.54	24.12	18.36	18.62	22.19	21.50	21.50
3	Durable goods	7.56	7.23	5.15	5.04	8.79	8.73	8.52	8.10	9.40	12.33	12.25	8.79	9.03	11.14	9.96	10.33
4	Primary metals	1.78	1.96	1.43	1.33	2.46	2.38	2.44	1.84	1.67	2.43	2.36	2.29	1.59	2.47	1.77	1.66
5	Blast furnaces	.98	1.15	.88	.90	1.32	2.20	1.61	1.02	2.09	1.65	2.00	1.90	1.12	1.98	1.30	2.01
6	Nonferrous metals	.41	.48	.30	.26	.54	.92	.74	.44	.37	.68	1.27	.79	.48	.44	.40	.45
7	Fabricated metals	.53	.68	.50	.53	.72	.63	.74	.77	.83	.96	.90	.74	.84	.61	.69	.78
8	Electrical machinery	.03	.55	.40	.43	.45	.56	.64	.66	.79	1.04	1.02	.80	.96	1.36	1.44	1.31
9	Machinery, except electrical	1.15	1.05	.71	.73	1.15	1.14	1.20	1.13	1.26	1.50	1.36	1.27	1.33	1.60	1.44	1.62
10	Transportation equipment	1.72	1.67	1.21	1.50	2.22	2.50	2.49	3.17	2.82	2.54	1.89	2.01	2.20	2.46	2.85	2.50
11	Motor vehicles	1.52	1.47	1.95	1.42	1.94	2.15	2.18	2.67	2.38	2.16	2.08	1.45	1.45	1.94	1.89	1.88
12	Aircraft	.98	.70	.90	.18	.91	.99	.55	.34	.37	.55	.08	.41	.43	.48	.43	.85
13	Stone, clay, and glass	.73	.64	.56	.65	.76	.64	.69	.73	1.02	1.26	1.13	.79	.96	1.08	.94	.97
14	Other durables	.91	.61	.64	.71	.83	.78	.81	.85	1.00	1.47	.91	.89	1.06	1.37	1.81	1.35
15	Nondurable goods	11.76	11.46	8.92	9.40	10.14	10.64	10.96	10.57	10.50	12.22	12.64	9.56	9.60	11.65	11.14	11.28
16	Food including beverage	2.20	2.21	1.82	1.61	1.73	1.57	1.60	1.65	1.55	1.71	1.73	1.53	1.85	1.83	2.02	1.94
17	Textiles	1.13	1.26	.91	.62	.67	.68	.55	.49	.51	.59	.47	.35	.43	.58	.49	.55
18	Paper	.85	.81	.60	.64	.76	.62	.69	.77	.84	1.23	1.17	.81	.89	1.05	.96	.85
19	Chemicals	2.37	1.90	1.29	1.44	2.14	2.33	2.23	1.95	1.62	2.10	2.45	1.88	1.82	2.17	2.18	2.15
20	Petroleum	3.72	4.15	3.43	2.06	3.62	4.35	4.53	4.61	4.74	5.68	5.36	3.81	3.73	2.96	4.15	4.28
21	Rubber	.45	.24	.22	.27	.38	.40	.42	.34	.39	.50	.48	.23	.38	.47	.50	.51
22	Other nondurables	1.03	.81	.65	.64	.66	.67	.75	.97	.85	.62	.96	.88	.90	1.01	.98	.96
23	Nonmanufacturing	26.34	30.31	28.85	31.29	32.52	34.60	33.47	34.54	37.55	41.79	43.13	40.90	42.70	44.51	44.76	48.56
24	Mining	1.52	1.87	1.71	1.58	1.90	2.04	2.03	2.07	2.07	2.48	2.40 / 4.02	1.99 / 3.15	1.93 / 4.14	1.73 / 4.16	1.76 / 2.66	1.89 / 4.15
25	Transportation	4.74	5.10	4.31	4.16	5.11	4.91	4.71	3.77	3.99	4.49	5.40	7.06	7.11	7.02	6.85	6.78
26	Public utilities	3.73	5.61	6.06	5.58	6.50	7.96	7.65	7.21	6.93	7.26	19.07	20.04	31.59	23.74	23.41	25.01
27	Trade and services	11.56	11.95	12.38	14.31	13.80	12.29	13.49	14.76	17.58	19.65	5.05	5.00	6.52	5.56	5.53	5.09
28	Wholesale and retail trade	5.05	4.43	3.96	4.72	4.57	4.60	4.64	4.84	5.45	6.15						
29	Finance, insurance, and real estate	2.48	3.34	4.16	4.53	4.14	3.25	3.45	4.34	6.86	7.13	7.14	8.07	9.09	9.54	8.59	10.01
30	Personal, business, and professional services	4.05	4.12	4.19	5.06	5.10	5.03	5.40	5.58	6.56	6.51	6.56	6.96	6.93	7.53	8.30	8.58
31	Communication and other	4.79	5.75	4.94	4.70	5.03	5.17	5.37	5.73	6.99	7.79	8.20	8.06	8.04	8.85	9.14	10.12
32	Communication	2.62	3.19	2.35	1.96	2.12	2.47	2.70	2.76	3.21	4.06	4.43	4.11	4.12	4.81	4.90	5.56
33	Other	2.16	2.56	2.49	2.79	2.90	2.81	2.67	2.97	2.78	3.71	3.80	3.94	3.91	4.05	4.24	4.54

Line		1947 I	1947 II	1947 III	1947 IV	1948 I	1948 II	1948 III	1948 IV	1949 I	1949 II	1949 III	1949 IV	1950 I	1950 II	1950 III	1950 IV
1	Total nonfarm business	46.15	44.95	46.19	46.72	46.67	40.21	45.00	40.12	46.85	44.39	42.95	41.46	42.27	43.71	47.91	49.55
2	Manufacturing	19.57	19.40	18.57	19.13	20.65	18.29	17.72	17.26	16.47	14.39	13.39	12.56	12.51	13.54	14.64	16.53
3	Durable goods	8.04	8.04	7.40	7.10	7.65	7.30	7.25	8.03	6.95	5.07	4.84	4.74	5.11	5.57	6.03	7.04
4	Primary metals	1.89	1.96	1.73	1.87	1.94	2.02	2.02	1.74	1.70	1.45	1.36	1.23	1.26	1.29	1.26	1.40
5	Blast furnaces	.98	1.04	.96	1.06	1.11	1.19	1.28	1.06	1.11	.81	.81	.71	.73	.74	.78	.84
6	Nonferrous metals	.35	.49	.11	.39	.43	.43	.40	.34	.29	.29	.31	.31	.31	.22	.21	.29
7	Fabricated metals	.69	.66	.55	.66	.45	.78	.68	.85	.55	.42	.30	.54	.68	.61	.03	.69
8	Electrical machinery	.04	.66	.59	.56	.59	.65	.55	.49	.64	.37	.45	.37	.36	.38	.48	.61
9	Machinery, except electrical	1.89	1.23	1.11	1.02	1.19	1.07	1.07	.96	.82	.78	.67	.63	.08	.68	.71	.97
10	Transportation equipment	2.00	1.74	1.63	1.60	1.94	1.69	1.87	1.66	1.32	1.13	1.17	1.17	1.25	1.51	1.66	1.53
11	Motor vehicles	1.77	1.55	1.33	1.42	1.76	1.69	1.37	1.35	1.13	1.02	1.03	1.03	1.15	1.39	1.51	1.43
12	Aircraft	.09	.08	.09	.09	.09	.15	.10	.11	.11	.10	.08	.08	.00	.07	.10	.14
13	Stone, clay, and glass	.70	.70	.55	.57	.98	.57	.51	.50	.42	.35	.32	.34	.42	.52	.59	.65
14	Other durables	.54	.50	.50	.78	.79	.54	.54	.70	.65	.56	.48	.46	.55	.57	.70	.89
15	Nondurable goods	11.55	11.30	12.09	12.03	13.00	11.00	10.47	10.56	10.09	9.32	8.52	7.83	7.70	7.79	8.05	9.49
16	Food including beverage	2.20	2.15	2.20	2.35	2.22	2.22	2.26	2.15	2.13	1.78	1.74	1.60	1.45	1.52	1.61	1.80
17	Textiles	1.08	1.12	1.22	1.19	1.19	1.30	1.28	1.25	1.18	.90	.79	.70	.74	.73	.64	.08
18	Paper	.63	.75	.55	.67	.67	.69	.79	.69	.65	.64	.55	.60	.00	.61	.64	.70
19	Chemicals	2.53	2.45	2.23	2.15	2.15	1.97	1.60	1.91	1.35	1.37	1.26	1.19	1.21	1.33	1.50	1.73
20	Petroleum	3.37	3.38	4.00	4.15	5.27	3.99	3.49	3.66	3.73	3.71	3.28	2.97	2.94	2.87	3.07	3.05
21	Rubber	.50	.45	.44	.41	.37	.32	.28	.21	.24	.23	.23	.18	.24	.21	.28	.30
22	Other nondurables	1.02	1.08	1.06	1.00	.98	.95	.73	1.0	.76	.65	.65	.59	.71	.53	.69	.84
23	Nonmanufacturing	26.69	25.95	26.62	27.69	38.12	30.21	30.29	31.86	30.66	30.40	29.60	28.92	29.47	30.57	42.33	32.59
24	Mining	1.12	1.38	1.65	1.50	1.53	2.18	1.71	2.13	2.15	1.74	1.57	1.89	1.40	1.47	1.65	1.07
25	Transportation	4.37	4.75	4.62	5.11	5.30	5.03	5.10	6.24	4.84	4.36	4.34	3.06	3.79	4.06	4.52	4.34
26	Public utilities	3.49	3.56	3.85	6.08	4.99	5.54	5.69	6.31	6.01	6.71	6.60	6.03	6.36	6.14	6.87	7.09
27	Trade and services	12.37	11.74	11.18	10.31	11.38	11.07	12.00	12.56	12.20	12.20	12.32	12.83	13.30	14.06	14.77	15.04
28	Wholesale and retail trade	5.30	5.20	4.32	4.63	4.50	4.30	4.44	4.32	3.96	3.87	4.05	4.03	4.58	4.07	4.74	4.80
29	Finance, insurance, and real estate	2.80	2.30	2.30	2.44	2.84	3.29	3.61	3.79	3.85	4.22	4.10	4.28	4.31	4.44	4.73	4.65
30	Personal, business, and professional services	4.18	4.03	3.96	3.87	4.04	4.08	4.04	4.90	4.37	4.17	4.11	4.53	5.50	4.95	5.30	5.50
31	Communication and other	4.42	4.14	5.40	5.30	5.92	5.84	5.79	5.51	5.83	4.51	4.71	4.08	4.57	4.67	4.72	4.91
32	Communication	2.50	2.00	2.79	3.20	3.33	3.27	3.23	2.96	2.09	2.51	2.21	2.00	1.84	1.99	1.80	1.93
33	Other	1.92	2.14	2.39	2.33	2.00	2.67	2.53	2.54	2.39	2.50	2.50	2.03	2.73	2.83	2.92	2.92

The implicit price deflators for all company-based industries (except blast furnaces and mining) increased at a slower rate in 1972–80 than did the corresponding fixed-weighted price indexes (table 5). For company-based industries this reflected both: (1) the fact that for establishment-based industries the implicit price deflators generally increased at lower rates than the corresponding fixed-weighted indexes, and (2) changes in the composition of establishments owned by the company-based industries. The effects of these two factors may be in the same or opposite directions for individual industries.

Comparison with price changes reported by survey respondents

Since 1971, a question in the special annual survey, which is conducted each

(text continued on p. 38)

Annually, 1947–80, and Quarterly, Seasonally Adjusted at Annual Rates, 1947–80

1972 dollars]

1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Line
73.16	82.68	91.22	105.83	104.37	108.27	114.14	125.27	132.40	141.93	158.16	136.17	119.86	124.31	134.66	145.09	157.26	155.57	1
22.90	27.06	33.19	39.62	39.75	38.14	40.99	40.00	34.77	34.29	40.45	45.86	41.21	42.34	44.60	46.60	55.24	60.10	2
11.29	14.22	17.83	21.69	21.82	21.05	22.60	21.34	17.31	18.12	21.94	24.09	20.27	20.67	22.44	25.68	29.65	31.78	3
2.03	2.95	2.84	3.92	4.11	4.09	3.78	3.61	2.81	2.43	2.87	3.84	4.58	4.10	3.68	3.64	3.79	3.94	4
1.19	1.09	2.00	2.20	2.24	2.39	2.10	1.76	1.32	1.06	1.19	1.68	2.28	2.18	1.80	1.84	1.69	1.60	5
.63	.75	.02	1.29	1.57	1.31	1.31	1.28	1.06	.97	1.28	1.78	1.63	1.40	1.28	1.39	1.39	1.57	6
.70	1.09	1.11	1.44	1.57	1.60	1.61	1.81	1.23	1.42	1.74	1.70	1.53	1.62	1.71	1.63	1.77	1.59	7
1.32	1.61	2.18	3.15	3.84	3.72	3.66	3.81	3.14	2.80	5.68	3.48	2.49	2.70	3.31	3.70	4.44	5.82	8
1.59	2.95	2.81	3.60	3.59	3.39	4.04	4.06	3.23	3.21	5.37	4.60	3.60	4.06	4.65	4.71	5.29	6.45	9
3.08	3.93	4.78	5.76	5.87	4.64	5.40	4.97	3.65	4.40	5.47	6.07	4.54	4.62	6.19	7.41	8.67	9.59	10
2.34	3.16	3.88	2.68	3.42	3.09	3.88	3.23	2.40	3.00	4.71	3.85	2.57	2.61	3.84	4.60	4.71	4.69	11
.69	.85	.65	1.49	1.55	1.44	1.47	.96	.65	.68	.88	1.32	1.80	1.24	1.87	1.65	2.95	2.78	12
.84	1.09	1.15	1.46	1.14	1.65	1.24	1.14	.96	1.34	1.64	1.44	1.25	1.38	1.61	1.69	2.21	1.87	13
1.44	1.61	1.66	2.37	2.11	2.27	2.85	2.58	2.28	2.54	3.09	2.96	2.19	2.22	2.45	2.41	2.44	2.72	14
11.60	12.76	15.80	18.12	17.98	17.10	18.49	18.64	17.45	17.16	18.74	21.70	20.93	21.86	22.66	23.01	25.71	28.32	15
1.96	2.81	2.42	3.07	2.58	2.60	3.12	3.59	3.45	3.27	3.47	3.46	3.06	3.47	3.60	2.77	3.80	3.62	16
.59	.75	1.04	1.25	.97	.77	.97	.84	.06	1.06	1.00	.96	.67	.74	.84	.88	.85	.85	17
.84	1.20	1.40	1.67	1.86	1.50	1.62	1.38	1.38	1.48	1.90	2.48	2.25	2.21	2.44	2.60	3.18	3.04	18
2.28	2.74	3.68	4.24	4.31	3.80	3.40	3.66	3.57	3.37	4.45	5.57	3.76	5.79	6.50	6.27	6.09	6.87	19
4.37	4.91	6.34	6.08	6.09	6.05	6.01	5.62	5.49	4.79	4.40	5.89	6.62	4.78	7.30	7.07	7.74	8.95	20
.51	.61	.76	.65	.90	1.12	1.22	1.00	.81	1.03	1.48	1.35	.68	.85	1.12	1.22	1.25	.93	21
1.09	1.21	1.21	1.61	1.86	1.59	1.65	2.08	2.07	2.19	2.44	2.06	1.60	1.71	1.92	2.21	2.80	3.34	22
48.17	54.70	60.03	66.01	64.62	68.12	71.16	75.37	77.72	84.65	91.47	88.38	78.45	80.77	86.09	97.30	102.02	98.43	23
1.60	1.77	1.80	1.81	1.71	1.72	2.02	2.20	2.78	2.67	3.12	3.70	4.18	4.67	5.20	5.14	5.14	5.26	24
4.28	6.70	6.92	7.98	7.70	7.96	8.00	7.50	6.07	6.71	7.14	7.07	6.49	6.16	6.27	6.58	6.88	6.12	25
7.12	7.79	8.58	10.07	11.60	12.71	13.60	14.82	15.28	16.38	17.14	16.73	14.24	14.66	16.84	17.58	18.27	17.47	26
25.67	27.77	29.67	32.61	29.13	30.77	32.52	32.41	35.10	39.65	42.60	41.16	35.31	37.60	41.00	46.29	40.09	47.16	27
6.45	7.47	8.45	8.67	8.58	8.25	8.60	9.40	9.65	10.02	12.50	11.90	9.82	10.52	11.66	12.74	13.48	12.11	28
8.74	8.06	8.98	9.60	8.14	9.25	10.48	9.56	11.64	13.68	13.50	14.16	13.68	12.61	15.79	17.27	13.81	14.69	29
10.48	11.26	12.20	13.65	12.42	13.07	13.45	13.85	14.09	15.86	16.00	15.10	12.06	14.46	15.55	16.21	16.79	16.18	30
10.41	11.74	13.08	14.12	14.47	14.94	17.00	18.84	18.40	18.96	20.39	20.72	17.28	17.49	18.40	22.00	22.70	22.42	31
5.74	6.59	7.48	8.40	8.64	8.80	10.20	11.76	11.67	12.26	13.08	12.70	11.10	11.19	13.25	15.32	16.78	17.11	32
4.65	5.16	5.65	5.72	5.84	6.14	6.80	7.07	6.78	6.71	7.31	7.02	6.00	6.20	6.15	6.58	5.97	5.31	33

1951				1952				1953				1954				1955				1956				
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	Line
49.09	51.80	52.16	51.25	54.14	52.40	50.18	51.13	53.44	54.32	53.90	54.14	53.87	52.52	53.11	52.33	52.94	55.10	59.22	61.97	64.38	66.67	64.42	67.27	1
16.39	15.86	19.04	20.17	20.77	21.07	19.68	19.97	20.64	20.82	20.11	20.34	20.51	19.81	19.39	19.01	18.24	20.31	20.46	21.19	22.66	24.34	25.37	25.48	2
7.49	8.53	9.55	9.67	10.13	9.89	9.42	9.49	9.65	9.59	9.27	9.55	9.54	9.23	8.90	8.74	8.60	8.95	9.64	10.42	11.29	12.12	12.75	13.14	3
1.79	2.26	2.72	3.09	3.30	3.67	3.30	3.35	3.04	2.95	2.60	2.22	1.97	1.71	1.48	1.29	1.48	1.50	1.74	1.88	2.04	2.28	2.35	2.09	4
.89	1.16	1.40	1.79	1.36	2.46	2.06	2.31	1.94	1.71	1.61	1.28	1.21	1.04	.98	.99	.97	1.06	1.11	1.22	1.30	1.60	1.53	1.89	5
.29	.51	.57	.71	.87	.88	1.04	.68	.80	.79	.71	.65	.84	.48	.38	.34	.32	.31	.41	.43	.52	.56	.68	.85	6
.79	.74	.76	.68	.64	.69	.85	.60	.74	.80	.70	.75	.80	.71	.78	.76	.84	.79	.82	.60	.80	1.03	.90	.95	7
.59	.57	.67	.69	.32	.66	.68	.08	.78	.65	.66	.91	.84	.61	.77	.77	.70	.76	.81	.63	.93	1.03	1.18	1.12	8
.84	1.07	1.30	1.29	1.16	1.14	1.06	1.19	1.29	1.38	1.23	1.21	1.16	1.12	1.14	1.10	1.12	1.21	1.32	1.39	1.52	1.83	1.65	1.67	9
1.94	2.23	2.43	2.28	2.70	2.59	2.46	2.38	2.35	2.24	2.35	2.98	3.20	3.24	3.18	2.98	2.64	2.66	2.88	3.19	3.00	3.31	3.98	3.88	10
1.70	1.59	1.97	1.62	2.30	2.09	2.21	2.09	2.04	1.93	2.03	2.79	2.12	3.05	2.90	2.61	2.39	2.23	2.37	2.61	3.13	3.17	3.24	3.11	11
.22	.29	.37	.38	.41	.85	.21	.19	.26	.26	.27	.21	.22	.23	.39	.28	.39	.34	.40	.43	.47	.85	.69	.65	12
.67	.76	.83	.77	.76	.69	.61	.68	.57	.69	.79	.66	.71	.71	.60	.63	.89	.89	1.04	1.33	1.23	1.28	1.00	1.42	13
.78	.81	.85	.80	.45	.76	.72	.70	.83	.79	.80	.63	.86	.82	.80	.91	.89	1.07	1.05	.09	.99	1.05	1.13	1.10	14
9.46	10.30	10.29	10.60	10.63	11.18	10.26	10.48	10.97	11.24	10.89	10.79	10.97	10.58	10.49	10.27	9.65	10.36	10.61	11.19	11.69	13.33	13.63	12.34	15
1.64	1.51	1.66	1.69	1.61	1.63	1.03	1.01	1.70	1.85	1.62	1.55	1.76	1.61	1.67	1.55	1.54	1.67	1.63	1.67	1.84	1.86	1.80	1.72	16
.60	.96	.88	.81	.75	.70	.04	.61	.61	.89	.54	.51	.48	.48	.48	.47	.45	.49	.50	.66	.80	.61	.60	.56	17
.74	.77	.75	.79	.67	.61	.03	.63	.62	.06	.72	.74	.79	.78	.73	.77	.89	.79	.01	.95	1.11	1.25	1.23	1.31	18
1.69	2.17	2.25	2.37	2.34	2.37	2.38	2.33	2.27	2.42	2.83	2.22	2.22	1.85	1.72	1.62	1.05	1.48	1.58	1.78	1.07	2.18	2.30	3.30	19
3.14	3.51	3.74	4.08	4.19	4.07	4.00	4.39	4.44	4.81	4.51	4.65	4.58	4.62	4.67	4.05	4.19	4.67	4.39	4.92	5.05	5.14	5.18	4.96	20
.36	.85	.87	.48	.41	.44	.41	.34	.41	.44	.42	.41	.37	.35	.32	.33	.35	.37	.48	.42	.48	.60	.61	.34	21
.71	.72	.64	.65	.60	.67	.08	.69	.81	.77	.69	.71	.90	.88	.87	.69	.70	.83	.88	.91	.85	.88	1.01	.94	22
32.31	32.96	33.81	32.04	33.37	31.42	30.45	31.19	32.73	33.41	33.58	33.60	33.80	33.71	33.78	33.33	34.72	34.39	38.78	40.37	41.40	42.33	41.65	41.34	23
1.68	1.93	1.98	1.97	2.10	2.11	1.92	1.98	2.01	1.89	2.11	2.10	1.90	2.17	2.13	1.89	1.83	2.01	2.14	2.30	2.46	2.64	2.48	2.48	24
4.77	5.25	5.24	5.17	5.39	5.09	4.48	4.74	4.72	4.68	4.80	4.68	4.30	3.78	3.68	3.37	3.60	3.90	4.02	4.46	4.34	4.46	4.60	4.43	25
6.43	6.65	6.78	6.53	7.50	6.38	6.76	7.18	7.71	7.96	7.98	7.77	7.67	7.62	7.40	6.76	6.72	6.87	7.18	6.99	6.92	7.29	7.16	7.47	26
14.42	14.25	13.77	13.09	12.91	12.72	12.81	12.18	12.53	13.51	13.70	13.84	14.63	14.60	15.21	15.21	16.18	16.93	16.11	19.12	19.82	20.28	19.60	19.80	27
4.80	4.72	4.44	4.59	4.26	3.98	3.81	4.01	4.54	4.68	4.70	4.85	4.49	4.50	5.08	5.08	5.21	5.11	6.00	5.87	6.24	5.70	5.98	5.71	28
4.67	4.27	4.12	3.69	3.40	3.18	3.85	3.32	3.23	3.44	3.49	3.85	3.76	4.31	4.29	4.58	5.07	5.88	6.18	5.67	6.88	7.10	7.22	7.25	29
5.05	5.29	5.31	5.29	5.20	5.02	5.85	4.81	5.10	5.38	5.51	5.64	4.68	5.60	5.89	5.55	5.91	6.13	6.22	6.07	6.60	6.42	6.47	6.84	30
4.90	4.85	5.03	5.39	5.41	5.28	5.28	5.13	5.43	5.45	5.30	5.31	5.48	5.65	5.70	6.01	5.40	6.08	7.38	7.60	7.66	7.77	7.77	7.96	31
1.98	2.02	2.15	2.34	2.40	2.34	2.54	2.58	2.62	2.75	2.72	2.73	2.74	2.79	2.77	2.75	2.92	3.00	3.34	3.67	3.77	4.04	4.19	4.23	32
2.92	2.83	2.88	2.96	3.01	2.94	2.74	2.54	2.81	2.71	2.58	2.58	2.74	2.86	2.93	3.26	2.48	3.08	4.04	3.93	3.88	3.73	3.59	3.64	33

Table 8.—New Plant and Equipment Expenditures by U.S. Nonfarm Business[‡]

[Billions of

Line		1957				1958				1959				1960				1961			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Total nonfarm business	57.93	58.27	58.29	55.52	53.35	53.40	57.53	57.52	58.68	60.63	63.56	63.17	65.37	65.00	65.65	66.60	65.11	64.86	65.97	67.45
2	Manufacturing	25.20	24.68	25.38	23.60	21.39	20.60	17.07	16.85	17.46	18.11	18.94	20.03	21.49	22.73	22.38	22.27	21.10	21.18	21.78	21.43
3	Durable goods	12.90	12.82	12.36	11.58	10.59	8.93	8.08	7.57	8.18	8.60	9.26	9.84	10.92	11.35	11.20	11.06	10.23	9.80	9.84	10.06
4	Primary metals[1]	3.16	3.07	3.85	3.57	2.60	2.38	2.05	1.73	1.64	1.90	1.40	1.95	2.39	2.57	2.59	2.23	2.05	1.78	1.82	1.82
5	Blast furnaces	1.94	1.90	2.13	2.07	1.97	1.57	1.35	1.11	1.05	1.18	.88	1.30	1.74	1.92	1.68	1.72	1.40	1.24	1.05	1.06
6	Nonferrous metals	1.06	1.37	1.41	1.24	.90	.70	.58	.52	.60	.59	.42	.47	.45	.45	.42	.43	.39	.39	.40	.87
7	Fabricated metals	.80	1.42	1.04	.96	.87	.71	.72	.65	.71	.79	.92	.94	.80	.85	.77	.72	.72	.70	.63	.73
8	Electrical machinery	1.08	1.54	2.61	.97	.80	.82	.72	.75	.82	.90	1.01	1.05	1.17	1.28	1.27	1.01	1.40	1.49	1.41	1.28
9	Machinery, except electrical	1.73	1.82	1.63	1.35	1.00	1.26	1.13	1.09	1.12	1.29	1.41	1.49	1.64	1.63	1.52	1.51	1.53	1.45	1.33	1.45
10	Transportation equipment[1]	3.24	3.14	2.69	2.35	2.36	3.07	1.92	1.79	2.11	2.13	2.29	2.27	2.52	2.55	2.08	2.60	2.30	2.35	2.29	2.49
11	Motor vehicles	2.51	2.26	1.93	1.82	1.62	1.55	1.42	1.30	1.59	1.58	1.76	1.74	1.93	1.09	2.02	1.99	1.74	1.90	1.76	1.88
12	Aircraft	.72	.75	.66	.52	.61	.89	.36	.37	.41	.44	.44	.43	.50	.45	.07	.60	.44	.43	.38	.46
13	Stone, clay, and glass	1.19	1.21	1.11	1.00	1.02	.80	.90	.69	.84	.92	1.00	.99	1.09	1.16	1.08	1.00	.86	.87	.95	1.10
14	Other durables[2]	1.08	.93	.88	.85	.94	.87	.88	.69	.91	1.04	1.14	1.16	1.21	1.31	1.25	1.29	1.28	1.28	1.30	1.88
15	Nondurable goods	12.89	12.86	12.89	12.86	10.80	9.69	8.00	8.78	9.31	9.25	9.68	10.18	10.48	11.39	11.14	11.21	10.86	11.25	11.06	11.29
16	Food including beverage	1.79	1.72	1.72	1.75	1.30	1.40	1.52	1.62	1.58	1.61	1.00	1.73	1.74	1.85	1.54	1.88	1.93	1.95	2.06	2.15
17	Textiles	.64	.50	.45	.39	.38	.30	.20	.31	.34	.41	.43	.63	.58	.40	.50	.50	.54	.49	.48	.47
18	Paper	1.29	1.24	1.15	1.03	.93	.81	.82	.78	.90	.82	.94	1.00	1.02	1.07	1.66	1.05	.96	.91	.78	.77
19	Chemicals	2.31	2.45	2.56	2.48	1.96	1.78	1.70	1.52	1.54	1.54	1.59	1.80	1.99	2.20	2.37	2.20	2.03	2.23	2.31	2.29
20	Petroleum	5.53	5.43	5.50	5.06	4.42	3.84	3.46	3.55	3.79	3.05	3.75	3.75	3.69	4.14	3.84	4.15	4.05	4.21	4.15	4.21
21	Rubber	.49	.52	.46	.47	.38	.32	.30	.20	.35	.35	.42	.42	.40	.47	.47	.42	.48	.48	.48	.56
22	Other nondurables[3]	.06	.60	.98	.89	.94	.84	.87	.89	.91	.80	.87	.94	.87	1.06	1.05	.97	.91	.67	.00	.65
23	Nonmanufacturing	42.73	44.19	43.11	42.03	41.97	40.91	40.46	41.17	41.21	42.52	43.14	43.15	44.97	45.35	43.30	44.41	44.06	43.72	45.27	46.03
24	Mining	2.55	2.49	2.42	2.28	2.00	2.02	1.90	1.97	1.87	1.75	1.82	1.87	1.71	1.83	1.73	1.85	1.63	1.70	1.71	1.78
25	Transportation	4.38	4.74	4.86	4.48	3.91	2.98	2.92	3.60	3.44	4.19	4.74	4.19	4.42	4.43	3.94	3.90	3.55	3.42	3.51	3.88
26	Public utilities	8.20	8.35	8.68	8.42	7.53	7.29	7.75	7.77	7.52	7.31	6.84	6.77	7.33	6.97	6.70	6.98	6.53	6.84	6.86	6.88
27	Trade and services	19.25	19.20	18.87	18.58	20.00	19.63	20.18	20.36	20.04	21.36	22.32	22.07	22.00	23.23	21.02	22.68	23.03	23.36	23.61	24.15
28	Wholesale and retail trade	5.38	5.30	4.60	4.73	4.34	4.71	5.10	5.00	5.30	5.08	5.78	5.67	5.48	5.73	5.44	5.60	5.40	5.40	5.36	5.79
29	Finance, insurance, and real estate	7.22	7.31	7.40	7.74	8.29	8.05	7.06	7.98	8.35	8.16	9.07	9.20	9.71	9.00	9.22	9.00	9.78	9.31	9.44	9.89
30	Personal, business, and professional services	6.85	6.88	6.59	6.30	6.66	6.87	7.11	7.31	7.07	6.75	6.87	7.31	7.72	7.03	7.26	7.03	7.75	8.00	8.81	8.55
31	Communication and other	8.40	8.43	8.28	8.05	8.15	8.09	8.00	7.00	7.78	7.89	8.22	8.35	8.81	8.88	8.93	9.05	9.00	8.90	9.20	9.37
32	Communication	4.99	4.51	4.49	4.20	4.39	4.00	3.95	3.97	3.87	4.04	4.24	4.34	4.59	4.79	4.93	4.94	3.85	4.79	4.86	5.07
33	Other[4]	3.92	3.92	3.66	3.70	3.77	3.03	3.86	4.03	3.91	3.85	3.97	3.91	6.32	4.09	4.00	4.11	4.15	4.11	6.33	4.30

Line		1969				1970				1971				1972				1973			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Total nonfarm business	111.28	113.70	116.57	116.91	115.87	116.36	116.38	112.46	116.40	112.71	112.46	114.17	106.87	116.63	112.30	125.65	128.61	133.30	135.14	133.69
2	Manufacturing	39.52	40.84	42.15	41.45	41.43	40.79	39.99	37.54	35.94	34.92	35.54	34.34	33.91	34.61	35.17	37.25	39.52	40.16	41.54	42.51
3	Durable goods	22.19	22.00	22.80	22.27	22.49	22.06	21.12	19.70	17.83	17.34	18.70	17.33	17.15	17.49	18.20	19.40	20.54	21.29	22.41	22.52
4	Primary metals[1]	3.08	2.88	3.75	3.51	3.50	3.49	3.50	3.50	3.13	2.97	2.67	2.50	2.42	2.38	2.47	2.49	2.57	2.81	2.99	2.09
5	Blast furnaces	2.30	2.18	2.06	1.87	1.90	1.92	1.78	1.62	1.57	1.27	1.22	1.22	1.05	1.06	1.05	1.16	1.11	1.17	1.32	1.27
6	Nonferrous metals	1.18	1.28	1.20	1.18	1.24	1.19	1.26	1.38	1.08	1.23	.96	.94	1.01	.80	.08	.96	1.05	1.31	1.29	1.27
7	Fabricated metals	1.51	1.54	1.49	1.50	1.88	1.33	1.25	1.25	1.15	1.26	1.26	1.20	1.29	1.34	1.47	1.40	1.66	1.77	1.74	1.80
8	Electrical machinery	3.01	3.71	3.52	3.80	3.97	3.90	3.64	3.51	3.20	3.00	3.15	3.03	2.54	2.51	2.70	3.06	3.19	3.33	3.47	3.52
9	Machinery, except electrical	3.80	3.93	4.21	4.30	4.44	4.28	4.00	3.51	3.41	3.32	2.02	3.27	2.64	3.08	3.20	3.73	3.81	4.64	3.95	3.68
10	Transportation equipment[1]	5.32	5.28	5.74	5.15	5.38	5.24	4.93	4.14	3.70	3.48	3.00	3.83	4.25	4.32	4.65	5.00	5.26	5.60	6.08	6.08
11	Motor vehicles	3.22	3.29	3.47	3.30	3.41	3.40	3.20	2.83	2.47	2.31	2.46	2.71	2.83	3.01	3.04	3.14	3.33	3.63	3.96	4.12
12	Aircraft	1.51	1.62	1.60	1.16	1.13	1.45	1.67	1.80	.72	.62	.53	.64	.67	.54	.70	.72	.79	.66	.81	.92
13	Stone, clay, and glass	1.23	1.20	1.30	1.32	1.19	1.30	1.18	1.00	.98	.85	1.01	1.01	1.28	1.28	1.34	1.42	1.49	1.50	1.53	1.48
14	Other durables[2]	2.76	2.59	2.93	2.96	2.96	2.09	2.09	2.30	2.50	2.27	2.24	2.37	2.56	2.44	2.67	2.93	3.03	3.07	3.03	3.28
15	Nondurable goods	17.34	18.18	19.20	19.18	18.93	18.74	18.64	18.00	18.15	17.50	17.06	17.01	16.64	17.12	16.88	17.70	18.01	18.25	20.12	19.50
16	Food including beverage	2.88	2.97	3.17	3.47	3.66	3.55	3.62	3.53	3.40	3.63	3.37	3.33	3.28	3.29	3.30	3.21	3.28	3.36	3.60	3.74
17	Textiles	.88	.96	1.06	.97	.90	.80	.84	.84	.82	.91	.04	1.04	1.14	1.11	1.02	.00	1.04	.88	1.01	.96
18	Paper	1.01	1.82	1.01	1.03	2.01	1.08	1.63	1.71	1.49	1.26	1.30	1.20	1.28	1.42	1.42	1.57	1.04	1.81	2.12	2.03
19	Chemicals	3.20	3.29	3.47	2.65	3.68	3.09	3.60	3.49	3.50	3.88	3.31	3.30	1.37	3.34	3.28	3.49	3.68	3.89	4.19	4.52
20	Petroleum	6.75	6.87	8.25	6.14	6.90	6.90	6.60	6.00	6.00	6.54	6.48	6.08	4.70	4.09	4.03	4.84	4.28	4.18	4.38	4.75
21	Rubber	1.21	1.27	1.24	1.15	1.13	1.07	.90	.90	.84	.70	.79	.87	.87	.95	1.02	1.10	1.47	1.45	1.52	1.49
22	Other nondurables[3]	1.60	2.01	2.16	1.89	2.11	1.93	2.00	2.01	2.13	2.00	1.00	2.10	2.04	2.10	2.14	2.50	2.71	2.56	2.30	2.09
23	Nonmanufacturing	71.76	72.43	74.42	74.38	74.44	75.57	76.45	74.02	74.60	77.78	78.04	79.83	82.96	82.06	84.03	89.50	89.05	93.16	91.61	91.07
24	Mining	1.91	2.03	2.06	2.10	2.12	2.00	2.23	2.40	2.86	3.70	2.89	2.91	2.94	3.00	2.54	3.00	2.78	2.96	3.33	3.40
25	Transportation	8.62	7.71	7.71	7.98	7.48	7.43	7.60	7.24	5.02	6.50	5.87	6.52	6.00	7.01	6.82	6.68	6.95	7.31	7.85	7.14
26	Public utilities	12.51	13.66	12.53	13.08	13.48	14.22	14.28	14.01	14.88	15.25	15.64	15.36	16.10	15.90	16.96	16.56	16.84	16.87	17.36	17.50
27	Trade and services	31.30	32.19	33.57	32.07	32.25	32.00	32.11	31.68	33.14	34.63	35.62	37.25	37.75	37.02	40.17	43.62	43.15	45.57	42.80	42.40
28	Wholesale and retail trade	7.90	8.12	8.68	9.48	9.56	9.07	9.58	9.14	9.50	9.11	9.56	10.06	10.21	10.80	11.10	11.49	12.06	12.08	12.12	12.30
29	Finance, insurance, and real estate	10.34	10.32	11.07	10.30	9.90	9.90	9.96	9.50	10.29	11.39	11.62	12.54	12.20	12.04	12.74	14.74	15.32	16.48	15.28	14.44
30	Personal, business, and professional services	12.17	13.00	13.72	13.34	13.75	14.14	14.43	13.04	13.35	14.00	14.33	14.63	15.34	14.23	15.38	16.39	15.70	16.41	16.16	15.66
31	Communication and other	16.37	16.52	17.40	17.63	18.14	19.20	19.26	18.00	18.05	18.42	18.88	17.69	19.04	18.16	18.73	19.60	20.34	20.65	19.98	20.56
32	Communication	9.67	9.77	10.58	10.76	11.09	12.00	12.16	11.82	12.04	12.00	11.54	11.08	12.21	11.79	11.97	13.01	12.43	12.99	13.20	13.41
33	Other[4]	6.70	6.75	6.88	6.89	7.06	7.20	7.11	6.87	6.40	6.08	5.88	7.08	6.83	6.36	6.76	6.58	7.72	7.03	6.00	7.17

1. Includes industries not shown separately.
2. Consists of lumber, furniture, instruments, and miscellaneous.
3. Consists of apparel, tobacco, leather, and printing-publishing.
4. Consists of construction; social services and membership organizations; and forestry, fisheries, and agricultural services.

Annually, 1947–80, and Quarterly, Seasonally Adjusted at Annual Rates, 1947–80—Continued

[1972 dollars]

Line	1962				1963				1964				1965				1966				1967				1968			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	69.30	69.63	72.63	70.24	69.41	71.09	73.69	74.44	78.59	81.91	84.06	85.96	87.79	90.67	94.66	96.96	102.38	104.12	107.70	108.24	105.84	104.31	104.71	103.65	107.30	104.77	106.16	107.63
2	21.23	22.27	21.63	21.60	21.69	22.62	23.65	24.16	25.06	27.16	28.32	30.33	30.55	32.29	33.60	35.28	37.65	39.81	40.62	41.36	41.61	40.37	38.66	38.34	38.31	37.51	38.29	38.47
3	9.83	10.15	10.70	10.42	10.00	11.26	11.40	11.84	13.12	13.76	14.46	15.53	15.60	16.67	17.87	19.16	20.36	21.00	22.13	21.69	22.58	21.06	21.40	21.39	21.40	20.28	21.15	21.38
4	1.59	1.63	1.71	1.70	1.75	1.98	2.18	2.19	2.75	2.79	2.08	3.27	3.08	3.17	3.43	3.76	3.73	3.99	3.85	4.04	4.22	4.10	4.07	4.06	4.04	3.90	4.27	4.13
5	1.01	1.01	1.04	.99	1.02	1.16	1.20	1.32	1.70	1.77	1.01	2.13	1.93	2.06	2.15	2.33	2.14	2.20	2.21	3.24	2.30	2.41	2.35	2.30	2.84	2.28	2.51	2.47
6	.39	.42	.46	.98	.60	.63	.07	.61	.07	.73	.70	.81	.83	.80	.96	1.12	1.18	1.32	1.30	1.38	1.43	1.41	1.36	1.29	1.32	1.28	1.30	1.28
7	.78	.76	.81	.83	.79	.89	.92	1.02	.08	1.31	1.09	1.06	1.04	1.18	1.13	1.14	1.26	1.46	1.45	1.49	1.59	1.49	1.34	1.96	1.60	1.45	1.78	1.68
8	1.29	1.27	1.33	1.84	1.35	1.40	1.25	1.30	1.49	1.49	1.59	1.65	1.60	1.06	2.85	2.54	2.75	3.06	3.20	4.53	3.58	3.64	3.53	3.80	3.05	3.08	3.65	3.60
9	1.56	1.64	1.78	1.01	1.53	1.55	1.56	1.69	1.63	1.99	2.12	2.25	2.34	2.58	2.96	3.57	3.44	3.64	3.63	3.78	3.03	3.90	3.70	3.77	3.02	3.19	3.31	3.52
10	2.43	2.50	2.67	2.71	2.90	2.97	3.11	3.34	3.50	3.72	4.03	4.41	4.53	4.71	4.88	4.99	5.49	5.77	5.90	5.93	5.57	5.30	5.18	5.32	4.85	4.84	4.03	5.00
11	1.83	1.87	1.87	1.06	2.17	2.34	2.40	2.46	2.73	2.96	3.29	3.50	3.73	3.83	3.80	3.85	3.82	3.80	3.80	3.80	3.52	3.51	3.30	3.24	3.19	3.00	3.04	3.02
12	.44	.53	.63	.69	.58	.60	.68	.60	.62	.67	.47	.53	.64	.66	.70	.88	1.13	1.55	1.64	1.61	1.08	1.48	1.42	1.60	1.39	1.40	1.46	1.60
13	.00	1.02	.98	.08	.95	.02	.04	.04	1.07	1.08	1.05	1.13	1.07	1.14	1.10	1.20	1.38	1.39	1.45	1.60	1.32	1.14	1.10	1.01	.98	1.11	1.03	1.09
14	1.34	1.29	1.48	1.29	1.34	1.06	1.47	1.46	1.58	1.63	1.08	1.72	1.85	1.07	1.03	2.17	2.60	2.41	2.45	2.42	2.03	2.01	2.18	2.22	2.20	2.10	2.19	2.44
15	11.40	11.12	11.13	11.36	10.69	11.33	12.19	12.36	12.66	13.43	12.67	14.70	14.66	14.04	16.06	16.71	17.28	18.02	18.49	13.71	16.06	16.42	17.28	16.06	16.01	17.33	17.14	17.11
16	2.02	1.96	1.83	1.93	1.64	1.01	2.08	2.08	2.35	2.28	2.30	2.20	2.18	2.40	2.44	2.60	2.70	2.61	2.08	2.70	2.70	2.02	2.47	2.31	2.26	2.37	2.82	2.59
17	.49	.54	.50	.46	.56	.03	.08	.50	.62	.69	.82	.80	.92	.96	1.09	1.20	1.24	1.35	1.23	1.10	1.13	.00	.01	.80	.78	.75	.76	.81
18	.89	.81	.83	.93	.61	.92	1.02	.00	1.09	1.13	1.19	1.40	1.40	1.30	1.41	1.44	1.60	1.65	1.70	1.85	2.09	1.05	1.01	1.58	1.40	1.58	1.43	1.57
19	2.26	2.16	2.10	2.11	2.28	2.24	2.30	2.01	2.32	2.57	2.87	3.19	2.44	3.60	3.78	3.83	3.88	4.16	4.30	4.53	4.39	4.00	3.04	3.22	3.42	3.44	3.19	3.16
20	4.26	4.13	4.41	4.20	4.13	4.21	4.16	4.00	4.76	4.07	4.84	5.06	5.14	5.20	5.40	5.64	5.70	5.83	5.91	5.91	5.15	5.31	5.78	5.07	6.13	5.65	5.89	5.84
21	.51	.54	.50	.47	.44	.47	.51	.52	.03	.69	.60	.04	.75	.77	.77	.77	.78	.86	.84	.81	.77	.76	.74	.08	.08	1.06	1.20	1.27
22	.96	.00	.89	1.03	.08	.95	1.10	1.12	1.10	1.18	1.20	1.27	1.22	1.23	1.20	1.10	1.38	1.55	1.70	1.70	1.84	1.76	1.84	1.90	1.82	1.80	1.84	1.87
23	47.07	48.37	50.20	48.64	46.82	48.61	50.01	51.34	53.72	54.72	56.73	55.64	57.14	59.29	60.61	61.40	64.71	65.32	67.48	66.96	64.22	63.94	65.02	65.29	68.00	67.38	66.87	69.36
24	1.06	1.90	1.06	1.75	1.71	1.03	1.07	1.77	1.77	1.79	1.37	1.82	1.70	1.84	1.80	1.80	1.82	1.91	1.77	1.74	1.67	1.60	1.64	1.84	1.87	1.73	1.64	1.64
25	4.12	4.58	6.18	3.70	3.80	4.10	4.24	4.93	6.42	5.46	6.02	5.99	6.46	6.70	7.41	7.10	7.38	8.67	8.00	7.60	7.20	7.63	7.58	8.14	8.41	7.40	7.97	7.08
26	6.68	6.73	6.89	6.82	6.00	7.03	7.46	7.30	7.49	7.73	7.70	7.92	8.22	8.39	8.55	9.14	9.02	9.70	10.60	10.30	10.75	11.41	11.84	12.41	12.76	12.77	12.30	13.05
27	24.22	25.04	27.14	26.08	24.60	25.46	26.11	26.60	26.73	28.11	28.33	27.90	28.70	29.17	29.37	31.57	32.07	31.80	32.67	32.11	30.26	28.86	28.84	28.43	30.74	30.71	30.52	31.11
28	5.09	5.88	6.40	6.05	6.07	6.14	6.78	6.52	7.00	7.40	7.81	7.98	8.03	8.24	8.21	8.73	8.90	8.48	9.21	9.00	8.78	8.61	8.48	8.36	8.73	8.43	8.20	8.09
29	9.70	9.87	11.04	9.66	8.82	8.84	8.00	8.54	8.43	8.28	9.17	8.91	8.00	8.72	8.82	9.19	9.02	9.49	9.67	9.37	8.78	8.11	7.61	8.05	8.42	9.38	9.76	9.85
30	8.90	9.26	9.70	10.40	9.62	10.48	10.09	11.12	11.31	11.62	11.05	11.03	11.37	12.20	12.24	12.25	13.37	13.33	13.70	13.73	12.70	12.20	12.77	12.03	13.39	12.90	12.57	13.24
31	10.10	10.15	10.03	10.20	10.05	10.25	10.54	10.78	11.32	11.70	11.93	12.01	12.11	12.26	12.49	12.48	13.80	13.78	14.18	14.74	14.45	14.39	14.62	14.45	15.21	14.50	14.49	15.38
32	5.70	5.57	5.49	5.48	5.45	5.60	6.86	6.07	6.34	6.01	6.71	6.67	6.93	7.20	7.02	7.09	8.06	8.36	8.45	8.72	8.55	8.64	8.76	8.60	9.03	8.37	8.51	9.29
33	4.40	4.58	4.55	4.72	4.61	4.66	4.50	4.71	4.99	5.10	5.23	5.34	5.18	5.00	5.37	5.60	5.72	5.41	5.73	6.02	5.90	5.74	5.86	5.84	6.19	6.19	5.97	6.29

Line	1974				1975				1976				1977				1978				1979				1980			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	135.70	137.94	136.33	132.13	125.20	119.70	117.86	114.60	119.93	121.27	124.61	126.87	131.03	133.48	135.74	138.27	139.66	145.96	146.23	152.21	151.99	156.61	157.60	160.01	161.87	158.27	157.34	155.61
2	44.70	46.15	46.01	46.32	44.11	41.89	39.87	39.19	40.77	41.39	43.26	43.94	44.88	45.62	47.69	46.31	46.09	48.44	49.44	51.24	52.84	54.14	53.96	55.18	60.14	60.61	59.88	59.49
3	24.13	24.44	24.02	23.70	22.28	20.79	19.11	18.91	19.16	20.01	21.25	22.27	22.98	22.70	24.32	23.66	23.89	25.47	25.90	27.14	28.02	28.02	30.00	31.11	32.33	32.14	31.14	31.52
4	3.65	3.73	3.52	4.30	4.57	4.79	4.08	4.11	4.00	4.00	4.30	4.04	3.70	3.77	3.66	3.58	3.85	3.71	3.60	3.80	3.52	3.66	3.79	3.90	4.30	4.01	4.02	3.54
5	1.42	1.42	1.49	1.02	2.21	2.37	2.25	2.27	2.10	2.10	2.27	2.16	2.08	1.04	1.80	1.74	1.47	1.74	1.66	1.48	1.42	1.58	1.77	1.09	1.95	1.81	1.62	1.36
6	1.82	1.65	1.74	1.80	1.78	1.65	1.45	1.34	1.38	1.25	1.51	1.36	1.27	1.20	1.26	1.23	1.16	1.29	1.30	1.40	1.41	1.22	1.25	1.31	1.52	1.49	1.09	1.57
7	1.79	1.71	1.68	1.90	1.78	1.64	1.41	1.28	1.48	1.58	1.74	1.71	1.68	1.66	1.73	1.79	1.82	1.91	1.83	1.78	1.76	1.84	1.78	1.73	1.72	1.59	1.02	1.42
8	3.62	3.08	3.43	3.00	2.73	2.69	2.35	2.24	2.43	2.00	2.61	2.10	3.00	3.13	3.45	3.55	3.62	3.85	3.71	3.07	4.22	4.11	4.44	5.04	5.26	5.37	5.73	5.72
9	4.81	4.40	4.72	5.26	4.12	4.01	3.94	3.40	3.71	3.84	4.14	4.02	4.70	4.47	4.88	4.58	4.42	4.73	4.73	4.76	5.80	6.36	6.84	6.81	6.49	6.44	6.12	6.70
10	6.41	6.44	5.91	5.54	5.00	4.48	4.40	4.19	4.23	4.54	4.63	5.17	5.68	6.06	6.62	6.83	6.49	7.05	7.44	8.46	8.45	8.28	8.97	9.01	8.84	8.80	9.20	9.53
11	4.35	4.94	3.65	3.14	2.09	2.48	2.40	2.46	2.23	2.47	2.58	3.18	3.66	3.78	4.11	4.22	4.22	4.68	4.63	4.64	4.64	4.55	4.82	4.83	4.61	4.80	4.60	4.72
12	1.29	1.31	1.37	1.41	1.34	1.36	1.20	1.23	1.20	1.29	1.25	1.29	1.20	1.34	1.63	1.30	1.84	1.65	2.08	2.55	2.89	2.79	3.07	3.38	4.08	3.09	3.46	3.60
13	1.39	1.47	1.65	1.30	1.30	1.29	1.13	1.28	1.28	1.28	1.38	1.48	1.40	1.52	1.61	1.51	1.71	1.84	1.94	2.09	2.39	2.26	2.10	2.18	2.15	2.01	1.91	1.62
14	3.17	3.03	2.99	2.70	2.41	2.19	2.04	2.11	2.10	2.21	2.20	2.28	2.40	2.62	2.40	2.46	2.20	2.28	2.46	2.51	2.49	2.65	2.30	2.41	2.47	2.02	2.56	2.73
15	20.62	21.71	21.98	22.53	21.83	21.07	20.66	20.28	21.61	21.37	23.00	21.67	21.80	22.68	22.37	22.64	22.23	23.17	23.64	24.10	24.69	26.12	26.62	27.07	27.91	26.48	26.74	26.17
16	3.67	3.54	3.45	3.30	3.23	2.99	3.08	2.94	3.34	3.48	3.55	3.60	3.10	3.51	3.63	3.66	3.77	3.74	3.67	3.92	3.90	3.85	3.69	3.82	3.93	4.06	3.93	3.78
17	1.03	.99	.94	.85	.89	.61	.68	.78	.76	.70	.74	.71	.90	.85	.84	.84	.80	.83	.80	.88	.84	.80	.80	.88	.88	.84	.80	.88
18	2.81	2.54	2.58	2.60	2.43	2.10	2.13	2.27	2.09	2.11	2.30	2.34	2.39	2.52	2.48	2.43	2.30	2.46	2.46	2.66	3.00	3.16	3.17	3.30	3.48	3.65	3.67	3.64
19	4.94	5.39	5.96	6.07	5.94	6.03	5.71	5.33	5.79	5.75	5.87	5.78	6.65	5.43	5.65	6.00	4.29	5.28	5.21	5.33	5.99	6.00	6.21	6.38	6.88	6.78	6.89	6.12
20	5.41	5.86	5.62	6.59	6.52	6.60	6.34	6.41	6.64	6.63	6.06	6.60	7.16	7.28	7.70	7.10	6.97	7.38	4.70	7.02	7.48	7.26	7.70	6.61	6.23	8.64	9.34	9.50
21	1.39	1.47	1.20	1.25	1.02	.83	.87	.80	.01	.90	.92	.08	.97	1.04	1.31	1.29	1.30	1.36	1.32	1.32	1.34	1.20	1.23	1.10	1.01	.03	.07	.82
22	1.02	2.13	2.16	2.05	1.03	1.73	1.77	1.76	1.72	1.69	1.68	1.80	1.84	2.08	1.93	1.84	1.98	2.10	2.24	2.51	2.52	2.67	3.06	3.04	3.31	3.02	3.17	3.34
23	84.99	84.49	83.21	86.85	81.18	77.84	77.37	77.41	79.23	79.69	81.28	82.73	86.36	87.82	91.06	88.97	93.51	97.31	97.70	100.97	101.16	102.47	105.74	102.72	101.63	98.06	97.48	95.92
24	3.62	3.60	3.67	3.05	4.02	4.16	4.04	4.38	4.42	4.37	4.84	5.05	5.38	5.35	5.58	4.65	4.85	5.17	5.22	6.83	5.33	5.00	5.04	5.10	4.92	5.11	5.32	5.65
25	6.72	7.22	7.07	7.27	7.16	6.38	6.40	6.00	5.67	6.47	6.07	6.49	6.20	6.08	6.10	6.02	6.79	6.28	6.48	6.89	6.61	6.72	6.82	7.06	6.30	6.12	6.13	5.74
26	17.22	17.58	16.49	16.86	14.60	13.88	14.04	14.40	14.84	14.82	14.80	14.99	16.06	16.02	17.11	16.97	17.00	17.29	17.61	18.36	18.14	18.55	18.69	17.70	18.51	17.47	17.33	16.55
27	42.70	41.84	41.20	39.82	36.60	36.34	36.77	36.60	37.38	37.32	36.97	37.63	39.44	39.09	42.50	42.86	43.03	40.98	45.02	48.06	48.63	49.51	48.30	40.88	48.19	46.06	46.60	46.94
28	11.60	11.82	12.81	11.38	10.34	10.08	9.40	9.43	10.39	10.44	10.48	10.78	11.32	11.17	12.22	11.83	12.37	12.38	13.03	12.19	13.40	13.84	13.82	12.74	12.66	12.96	11.82	10.98
29	14.99	14.16	14.04	13.41	12.89	14.20	13.16	13.60	13.23	12.62	12.68	11.72	12.81	13.10	14.21	14.95	16.38	17.30	17.38	18.16	18.22	18.88	18.52	18.82	18.80	18.27	18.77	19.51
30	16.19	16.03	14.44	14.12	13.46	12.09	13.20	13.16	13.76	14.29	14.71	15.12	15.32	15.63	16.07	15.17	15.10	17.29	15.52	16.84	17.40	16.70	16.46	16.52	16.68	15.57	16.01	16.35
31	20.70	21.39	20.70	20.01	18.73	17.10	17.12	16.16	16.99	16.00	17.47	18.80	18.66	19.17	19.70	20.00	20.84	21.72	22.66	22.38	22.44	21.59	22.78	22.98	23.61	23.04	22.80	21.03
32	13.96	14.08	13.53	13.22	12.21	11.20	10.93	10.40	10.68	10.77	11.22	12.20	12.24	13.08	13.81	13.87	14.67	15.20	15.67	15.73	15.98	14.34	17.08	17.60	18.15	17.70	16.91	15.60
33	6.81	7.31	7.17	6.79	6.51	5.80	6.19	5.77	6.32	6.13	6.20	6.46	6.42	6.80	5.89	6.10	6.27	6.52	6.89	6.65	6.46	6.25	5.75	5.28	5.30	5.34	5.18	5.37

year in November and December, has asked respondents for their best estimates of changes in the prices paid for capital goods for the current year and for the following year.[9] Table 7 presents the correlation coefficients, by industry, for 1971–80 between the survey estimates of capital goods price changes (in the current year) and the corresponding percent changes in the implicit price deflators for P&E expenditures.

The correlation coefficients are fairly high, especially for rubber, blast furnaces, food including beverage, and paper in manufacturing and for most nonmanufacturing industries. With the exception of 1975, the two series on price changes for each industry moved together. In 1975, most industries reported a decline in the rate of increase of capital goods prices, but the deflator shows an increase. For all years except 1975, for total nonfarm business the price increase for capital goods reported by survey respondents was higher than the increase in the implicit price deflators presented in this article.

9. The responses to this question, with special emphasis on the price estimates for the following year, are analyzed in Frank de Leeuw and Michael J. McKelvey, "Price Expectations by Business Firms," *Brookings Papers on Economic Activity*, no. 1 (1981), pp. 299–313.

Table 9.—New Equipment Expenditures by U.S. Nonfarm Business; Annually,

[Billions of

Line		1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
1	Total nonfarm business	26.71	27.96	23.22	24.34	28.63	28.91	30.10	28.56	30.15	36.67	35.90	29.32	30.95	34.12	33.92	35.82
2	Manufacturing	12.61	12.48	9.68	9.78	12.34	13.29	14.79	14.29	13.23	16.45	16.29	11.92	11.69	14.73	13.66	14.17
3	Durable goods	5.44	5.36	3.87	4.51	5.96	6.52	6.93	6.91	6.97	9.01	8.58	6.15	6.06	8.23	7.43	8.08
4	Nondurable goods	7.24	7.12	5.51	5.22	6.39	6.71	6.85	6.38	6.20	7.45	7.91	5.75	6.03	6.49	6.23	6.08
5	Nonmanufacturing	14.10	15.47	13.34	14.15	16.29	16.43	16.31	14.55	16.92	19.12	19.41	17.41	19.27	19.40	19.35	21.65
6	Mining	1.14	1.43	1.28	1.11	1.39	1.50	1.45	1.50	1.47	1.73	1.73	1.44	1.39	1.31	1.14	1.36
7	Transportation	3.66	4.06	3.39	3.25	4.06	3.90	3.63	3.50	2.97	3.54	3.54	2.47	3.63	3.41	3.05	3.40
8	Public utilities	1.95	1.79	2.11	2.09	2.15	2.53	2.95	3.66	3.47	3.65	3.34	2.71	3.40	2.62	2.48	2.60
9	Trade and services	5.50	6.18	4.77	5.49	5.80	5.16	5.64	5.70	6.07	7.53	7.89	6.71	7.19	7.08	7.02	8.84
10	Communication and other	2.75	2.95	2.38	2.21	2.47	2.72	2.59	2.60	3.93	3.75	4.11	4.08	3.67	4.37	4.75	5.65

Line		1972				1973				1974				1975			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Total nonfarm business	65.40	68.35	69.85	75.50	76.65	79.10	80.71	81.05	82.64	84.36	85.67	83.94	76.67	74.48	73.17	71.68
2	Manufacturing	23.90	24.27	25.03	27.44	28.04	29.17	30.37	30.63	32.95	33.59	33.90	34.63	32.40	30.44	28.89	27.93
3	Durable goods	13.36	13.59	14.20	15.77	16.28	17.17	17.82	17.79	18.68	19.18	19.07	18.80	17.55	16.45	14.85	14.40
4	Nondurable goods	10.53	10.68	10.80	11.67	11.85	12.00	12.55	12.84	12.34	14.42	14.83	15.62	14.86	14.09	14.04	13.51
5	Nonmanufacturing	44.54	44.59	44.76	48.12	48.72	49.96	50.34	50.42	50.61	52.77	51.58	49.42	44.47	44.41	43.76	43.10
6	Mining	1.49	1.56	1.34	1.49	1.45	1.50	1.75	1.69	1.71	1.85	1.97	2.00	2.23	2.28	2.14	2.29
7	Transportation	6.06	5.94	4.39	6.40	5.70	5.86	6.03	5.84	5.56	6.01	5.69	5.51	5.32	4.42	4.68	4.13
8	Public utilities	7.30	7.00	6.85	7.11	7.12	7.00	7.65	7.86	7.69	8.37	7.45	8.71	8.07	8.53	8.65	8.06
9	Trade and services	17.84	18.60	19.22	21.48	21.59	22.70	23.59	22.94	22.73	21.69	23.31	21.75	20.57	20.40	20.48	20.87
10	Communication and other	11.86	11.59	11.96	12.64	12.85	12.84	12.30	12.01	12.99	13.64	13.27	13.24	12.30	11.01	11.91	10.24

Table 10.—New Plant Expenditures by U.S. Nonfarm Business; Annually,

[Billions of

Line		1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
1	Total nonfarm business	18.56	21.01	20.76	20.75	23.42	23.66	23.85	24.68	27.31	30.74	31.69	28.93	30.29	32.33	32.53	34.23
2	Manufacturing	6.73	6.36	4.69	4.60	6.69	7.14	6.79	6.38	6.68	8.98	8.52	6.43	6.05	7.47	7.44	7.53
3	Durable goods	2.21	1.97	1.28	1.43	3.51	3.21	2.68	2.19	2.42	3.31	3.60	2.64	2.13	2.80	2.55	2.19
4	Nondurable goods	4.51	4.31	3.41	3.17	3.78	3.93	4.11	4.19	4.24	4.77	4.83	3.80	3.92	4.86	4.91	5.14
5	Nonmanufacturing	12.23	14.80	16.01	17.13	16.83	16.93	17.36	18.28	20.65	22.95	23.37	23.50	24.34	24.91	25.40	24.69
6	Mining	.38	.45	.48	.46	.49	.54	.45	.47	.60	.70	.66	.56	.52	.52	.55	.69
7	Transportation	1.05	1.10	.91	.91	1.02	1.11	1.00	.97	1.02	1.10	1.08	.68	.61	.75	.68	.74
8	Public utilities	2.88	3.52	4.54	4.45	4.46	4.55	4.68	4.65	4.45	4.53	5.16	4.95	4.62	4.49	4.65	4.32
9	Trade and services	5.99	5.77	7.56	8.63	8.30	7.17	7.94	9.06	10.91	12.29	12.27	12.39	14.40	14.75	15.49	15.67
10	Communication and other	2.93	2.70	2.57	2.19	2.55	2.53	2.78	3.13	3.65	3.85	4.18	3.60	4.17	4.39	4.30	4.57

Line		1972				1973				1974				1975			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Total nonfarm business	46.44	47.73	48.35	51.39	51.75	54.17	52.43	52.54	53.04	51.25	49.66	48.19	46.42	45.21	44.85	45.83
2	Manufacturing	10.30	10.34	10.06	9.91	10.41	10.97	11.14	11.50	12.67	12.66	12.43	11.50	11.71	11.41	11.29	11.20
3	Durable goods	3.79	3.90	4.00	3.78	4.26	4.72	4.90	5.15	5.44	5.27	4.95	4.90	4.74	4.34	4.26	4.43
4	Nondurable goods	6.51	6.45	6.08	6.12	6.15	6.25	6.27	6.74	7.34	7.28	7.18	6.90	6.97	7.07	7.03	6.77
5	Nonmanufacturing	36.34	37.39	38.28	41.49	41.34	43.20	41.28	40.64	40.38	38.72	37.63	36.39	34.71	33.80	33.59	34.62
6	Mining	1.45	1.44	1.05	1.54	1.32	1.43	1.57	1.70	1.69	1.74	1.78	1.83	1.81	1.90	1.96	2.02
7	Transportation	.91	1.06	1.05	1.13	1.25	1.36	1.31	1.30	1.32	1.31	1.37	1.67	1.66	1.76	1.81	1.85
8	Public utilities	8.50	8.99	9.41	9.45	9.73	9.87	9.70	10.10	9.65	9.29	9.04	8.95	8.64	8.34	8.30	8.48
9	Trade and services	19.90	19.30	20.89	22.14	21.56	22.79	21.00	19.82	20.03	18.74	17.90	17.15	16.06	15.74	15.37	16.13
10	Communication and other	7.18	6.57	6.75	7.25	7.40	7.61	7.68	7.97	7.90	7.75	7.48	6.77	6.49	6.09	6.11	6.02

Technical Note

Derivation of Industry Implicit Price Deflators and Constant-Dollar Estimates

The procedure used to derive the implicit price deflators and the constant-dollar estimates has three steps. It may be shown compactly in matrix notation. Let Z_t^c be a nx1 vector of purchases of equipment (or structures) by type in current dollars for time t, Z_t^k be a nx1 vector of purchases of equipment (or structures) by type in constant dollars for time t, W_t be a 56xn matrix of weighting factors for time t, Y_t^c a 56x1 vector of establishment-based industry current-dollar expenditures for time t, and Y_t^k a 56x1 vector of establishment-based industry constant-dollar expenditures for time t. The value of n is 28 for equipment and 18 for structures. In step one, the establishment-based industry deflators are found by,

$$(1)\quad DE_t = Y_t^c / Y_t^k = W_t Z_t^c / W_t Z_t^k,\quad t = 1947{:}1,\ 1980{:}4$$

where / denotes a vector operation that divides two similar-size vectors (here, 56x1 vectors) element-by-element. DE_t is a 56x1 vector of establishment-based industry deflators.

Similarly, in step two, company-based industry deflators are found by,

$$(2)\quad DI_t = X_t Y_t^c / X_t Y_t^k,\quad t = 1947{:}1,\ 1980{:}4$$

where DI_t is a 88×1 vector of company-based industry deflators for time t and X_t is a 88×56 matrix of weighting factors for time t. The company-based industry deflators may be found directly, without calculating the estab-

1947-80, and Quarterly, Seasonally Adjusted at Annual Rates, 1972-80

1972 dollars]

1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Line
38.41	44.76	52.51	59.88	60.09	59.88	64.77	65.32	63.29	70.70	79.44	84.63	74.15	76.13	84.25	93.03	103.47	105.61	1
16.64	19.03	22.48	26.73	27.91	26.89	27.76	25.67	23.73	25.17	29.68	33.61	28.80	28.38	33.17	34.75	40.38	44.78	2
8.87	11.10	12.72	14.70	16.03	14.49	16.60	14.73	12.96	14.25	17.10	18.45	15.83	14.80	18.08	19.33	22.28	24.20	3
6.67	7.94	9.90	11.45	10.59	10.48	11.19	10.94	10.76	10.92	12.30	14.65	13.97	13.57	15.13	15.42	18.06	20.57	4
22.47	25.72	30.00	33.15	33.88	33.99	34.98	35.60	39.64	45.53	49.86	51.12	44.35	45.37	51.08	58.31	63.09	60.85	5
1.14	1.15	1.17	1.16	1.05	.98	1.10	1.09	1.40	1.48	1.50	1.93	2.33	2.94	2.73	2.58	2.95	2.75	6
3.47	4.77	5.02	4.87	6.47	6.08	6.76	6.65	4.85	5.67	5.88	6.78	4.57	4.37	4.69	5.17	5.41	4.73	7
2.62	2.34	2.96	3.46	4.29	4.16	4.63	5.55	6.60	7.07	7.08	7.69	6.63	5.92	7.13	7.82	7.39	8.90	8
9.52	10.61	12.85	15.78	12.65	13.54	14.25	14.05	16.76	19.30	22.48	21.67	26.49	21.85	23.43	28.31	31.66	28.38	9
6.72	6.24	7.79	7.88	8.40	8.99	10.05	11.67	10.87	12.03	12.84	13.28	11.14	11.45	12.89	15.00	15.87	16.08	10

1976				1977				1978				1979				1980				Line
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
73.16	73.69	75.43	78.36	81.39	82.91	87.52	86.17	86.73	93.03	93.74	96.52	98.36	102.25	104.06	108.16	107.10	106.33	105.49	103.45	1
29.09	29.18	30.04	31.14	32.16	32.73	34.75	33.04	32.11	35.34	34.56	35.95	37.36	39.09	40.73	43.44	44.97	44.92	44.40	44.77	2
14.73	15.35	16.22	17.26	17.67	17.52	18.61	18.37	17.82	19.43	19.60	20.47	20.94	21.70	22.78	23.71	24.37	24.27	23.51	24.63	3
14.35	13.89	13.83	13.88	14.48	15.21	16.14	14.67	14.29	15.91	14.96	15.48	16.42	17.39	17.95	19.73	20.60	20.65	20.89	20.14	4
44.07	44.41	45.38	47.22	49.23	50.18	52.77	53.13	54.63	57.48	59.18	61.66	61.00	63.20	63.34	64.72	62.13	61.41	61.09	58.68	5
2.28	2.07	2.48	2.54	2.63	2.73	2.92	2.49	2.55	2.88	2.80	2.24	3.18	2.97	2.65	2.80	2.68	2.78	2.72	2.02	6
3.71	4.38	4.14	4.61	4.67	4.67	4.65	4.68	5.20	4.96	5.04	5.41	5.23	6.20	5.49	5.63	4.94	4.77	4.79	4.40	7
8.02	5.98	5.66	6.63	6.79	7.13	7.50	7.02	6.81	6.90	7.24	7.36	7.24	7.34	7.30	7.24	7.25	7.07	7.17	8.36	8
21.16	20.90	21.71	21.60	23.07	22.72	23.64	24.60	25.66	28.23	28.56	30.45	30.51	31.04	31.55	33.69	30.32	30.62	30.57	29.60	9
10.81	11.15	11.41	12.46	12.11	12.92	13.47	13.67	14.63	14.77	15.44	16.16	15.38	16.62	16.14	15.36	16.94	16.85	15.89	15.20	10

1947-80, and Quarterly, Seasonally Adjusted at Annual Rates, 1972-80

1972 dollars]

1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Line
34.14	37.94	40.71	45.95	44.28	46.44	49.37	48.94	49.20	50.23	52.72	47.55	45.51	47.87	50.42	52.96	53.81	52.92	1
7.44	8.94	10.76	13.09	12.74	12.25	13.21	14.33	11.04	11.11	11.11	12.29	11.40	12.48	12.71	13.85	14.98	15.34	2
2.42	3.06	4.29	5.90	5.80	6.32	5.90	6.63	4.35	4.87	4.76	5.14	4.44	4.78	5.20	6.25	7.28	7.59	3
5.02	5.88	6.49	7.19	6.93	5.93	7.31	7.70	6.69	6.24	6.35	7.15	6.96	7.70	7.52	7.60	7.71	7.75	4
26.70	28.99	29.95	32.86	31.54	34.19	36.16	34.61	38.16	39.12	41.61	35.26	34.11	35.39	37.72	39.11	38.83	37.58	5
.58	.61	.68	.65	.68	.74	.83	1.17	1.29	1.48	1.51	1.77	1.90	2.38	2.66	2.26	2.10	2.48	6
.52	.93	1.09	1.13	1.04	1.16	1.24	1.15	1.22	1.04	1.28	1.37	1.82	1.68	1.56	1.41	1.42	1.49	7
4.40	4.85	5.61	6.61	7.38	8.65	8.78	8.77	8.59	9.19	9.86	9.21	8.42	8.04	9.71	10.52	10.68	10.50	8
16.15	17.16	17.32	18.72	16.45	17.64	18.29	17.78	19.42	20.56	21.21	15.48	15.83	16.24	17.57	18.02	17.60	16.66	9
4.08	5.61	5.38	6.25	6.07	6.04	6.94	7.17	7.59	6.94	7.74	7.44	6.14	6.00	6.80	6.90	6.83	6.84	10

1976				1977				1978				1979				1980				Line
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
46.84	47.78	48.08	48.31	49.64	50.67	51.22	51.10	52.99	52.12	52.47	53.60	54.03	54.32	53.54	52.74	54.76	52.87	51.87	52.16	1
11.69	12.31	12.24	12.70	12.52	12.93	12.93	13.26	14.00	14.00	13.86	14.29	14.98	15.05	15.13	14.74	15.26	15.69	15.48	14.92	2
4.43	4.66	4.09	5.01	5.11	5.46	5.71	6.20	6.01	6.04	6.29	6.67	7.07	7.32	7.28	7.39	7.95	7.89	7.63	6.89	3
7.26	7.65	8.15	7.70	7.41	7.47	7.22	7.06	7.99	7.96	7.57	7.62	7.91	7.73	7.85	7.35	7.31	7.80	7.85	8.03	4
35.15	35.47	35.87	35.61	37.12	37.84	38.29	37.84	38.99	38.49	38.61	39.31	39.05	39.27	38.41	38.00	39.50	37.18	36.39	37.24	5
2.13	2.30	2.88	2.51	2.69	2.62	2.65	2.38	2.30	2.33	2.33	2.08	2.15	2.13	2.10	2.38	2.25	2.29	2.60	2.73	6
1.94	2.15	1.99	1.80	1.63	2.01	1.52	1.34	1.51	1.30	1.44	1.38	1.38	1.44	1.41	1.42	1.55	1.30	1.34	1.85	7
8.82	8.85	9.14	8.95	8.88	9.40	9.92	8.86	10.40	10.29	10.27	11.03	10.90	11.19	11.89	10.45	11.36	10.40	10.14	10.19	8
16.24	16.41	15.36	15.95	16.37	17.57	18.00	17.87	18.86	18.76	17.94	17.62	18.11	17.56	16.74	17.18	17.98	16.88	16.09	17.16	9
6.00	5.75	6.56	6.24	6.56	6.24	6.23	6.19	6.32	6.85	7.13	7.20	7.10	6.96	6.64	6.64	6.56	6.70	6.25	5.83	10

lishment-based industry deflators, from the formula,

$$(8) \quad DI_t = X_t W_t Z_t^c / X_t W_t Z_t^k, \quad t=1947:1, \quad 1980:4$$

which follows from substituting (1) into (2). In step 3, constant-dollar estimates of P&E expenditures are found by applying these deflators to the current-dollar P&E survey expenditures.

Step 1. Establishment-based industry implicit price deflators

The weights (the W_t matrix in (1)) used in the first step are derived from the capital flow tables produced by BEA.[10] These tables disaggregate gross private fixed investment in the BEA input-output tables to show the amounts and types of capital goods, classified at the 4-digit Standard Industrial Classification (SIC) level, used by each of 76 establishment-based industries. (Nine of the 85 establishment-based industries in the input-output table do not use capital goods.) The dollar values in the tables reflect purchasers' prices in current dollars.

Capital flow tables are available for three years: 1963, 1967, and 1972. For each of these years, two capital flow matrixes are constructed—an equipment matrix and a structures matrix. The structures matrix is a disaggregation of the new construction I-O commodity group in the capital flow table. The capital goods categories for both the equipment and structures capital flow matrixes match the level of detail for types of fixed nonresidential investment published in NIPA tables 5.4–5.7. The 76 establishment-based using industry categories are combined to form the 56 establishment-based industry categories used in the second step. The columns of these aggregated capital flow matrixes show the distribution of types of capital goods; the rows show the composition of investment goods used by various industries. The matrixes for 1963 and 1967 are adjusted to 1972 SIC definitions.

The six matrixes (3 years, equipment and structures for each) are normalized by columns, i.e. each element in a column is divided by the sum for that column. The six normalized matrixes show the percentage distribution of capital goods by establishment-based using industry.

The percentage distribution of each type of capital good by using industry changes over time. To make estimates of the distribution for each quarter between 1963 and 1967, and between 1967 and 1972, linear interpolation is used. To interpolate between 1963 and 1967, the normalized matrix for 1963 is subtracted from the normalized matrix for 1967, and the resulting "difference matrix" is divided by 13 (the number of quarters between the fourth

quarter of 1963 and the first quarter of 1967). This "increment matrix" is added to the normalized matrix for 1963 to derive the normalized matrix for 1964:1, the increment matrix is added to the normalized matrix for 1964:1 to derive the normalized matrix for 1964:2, etc. The procedure for interpolating between 1967 and 1972 is similar. The normalized matrix for 1963 is used for all quarters before and including 1963:4, and the normalized matrix for 1972 is used for all quarters from 1972:1 forward.

A capital flow matrix for each quarter is derived by multiplying the quarterly adjusted NIPA estimates for individual types of producers' durable equipment (or structures), first in current dollars and then in constant dollars, down the appropriate columns in the appropriate normalized matrix.[11] The rows of each matrix are summed; these sums are the current- and constant-dollar estimates of establishment-based industry purchases of equipment or structures (the Y_t^c and Y_t^k vectors in (1) above).

Implicit price deflators for the 56 establishment-based industries are derived by dividing the current-dollar expenditures by the constant-dollar expenditures for each quarter (separately for structures and for equipment). Deflators for total industry investment (equipment plus structures) on an establishment basis are also derived.

Step 2. Company-based industry implicit price deflators

Step two converts the establishment-based industry expenditures derived in step one to company-based industry expenditures. The basic methodology is the same as for step one, although the construction of the appropriate weighting matrixes is considerably more complex.

The basic data for constructing the capital expenditures matrix (X_t in (2)) are compiled from data on expenditures cross-classified by establishments and by companies. These data, prepared by the Bureau of the Census, are available only for 1963, 1967, and 1972.

For 1972, the Census Bureau provided a special capital expenditures tabulation that shows purchases of equipment and of structures for company-based industries cross-classified by the establishments that are owned by companies within each company-based category. For 1963 and 1967, however, similar matrixes are not directly available. Instead, capital expenditures matrixes are derived from the employment matrixes published by the Bureau of the Census in its

Enterprise Statistics for 1963 and 1967 (Table 6 in Enterprise Statistics, Vol. 2, for 1963 and Table 2-3 in Enterprise Statistics for 1967). Each employment matrix shows the number of employees for company-based industries cross-classified by establishment-based industry.

Both employment matrixes and also the 1972 capital expenditures matrix are complete for manufacturing. However, all three are incomplete for nonmanufacturing, because the Census Bureau data are incomplete for transportation, communications, agriculture, finance-insurance-real estate, and public utilities.[12]

A major problem with the two employment matrixes is that many of the published cells contain letters, reflecting ranges of values, rather than actual numbers. This procedure is followed by the Census Bureau to prevent disclosure of confidential information. To deal with this problem, a numeric value for each cell of the matrix that contained a letter is estimated. Each estimate is constrained to be within (or on) the boundary of the range of values associated with each letter, and the matrix is forced to balance, i.e., the row and column totals equal those in the original published employment matrix.

To convert each employment matrix to a capital expenditures matrix, each column (an establishment-based industry) of the employment matrix is multiplied by an appropriate capital expenditures per employee ratio, also published in Enterprise Statistics.[13]

The capital expenditures matrixes for each of the three years (1963, 1967, 1972) are aggregated to 38 company-based industries (to match the categories in the P&E survey) and 56 establishment-based industries (to match the 56 establishment-based industry categories in step one). Equipment matrixes and structures matrixes are then derived for 1963 and for 1967 by applying to each column of the appropriate capital expenditures matrix the appropriate ratio of either equipment or structures capital expenditures to total capital expenditures for each establishment-based industry.[14] Matrixes for 1963 and 1967 are adjusted to 1972 SIC definitions.

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10. The table for 1972 is described in the July 1980 Survey.

11. Estimates of purchases of structures by type are available annually from 1946 forward but quarterly only from 1958:1. Quarterly estimates for the earlier period were derived by interpolation. Annual estimates were used as control totals, and the quarterly pattern of total purchases of structures (which is available back to 1946) was used to derive estimates of quarterly purchases of structures.

12. Estimates for these industries were made based on the investment data from the capital flow tables (for 1972) and data on the number of full- and part-time employees from the NIPA's.

13. The Census Bureau establishment-based data used to construct the capital expenditures per employee ratio differentiates between establishments classified in the same company-based category and all other establishments. Therefore, each column is actually multiplied by two ratios; the "diagonal" cell is multiplied by the capital expenditures per employee of establishments classified in the same company-based category, and the rest of the cells in the column are multiplied by the ratio for "all other establishments." This assumes that the capital expenditures per employee are equal for establishments owned by companies in different industries except those companies whose industry category is the same as that for the establishment.

14. These capital expenditures data are also published in Enterprise Statistics.

The equipment and structures matrixes are normalized by establishment-based industry. The normalized matrixes for 1963, 1967, and 1972 are linearly interpolated using the same procedure as in step one. The normalized matrix for 1963 is used for all quarters prior to 1964, and the normalized matrix for 1972 is used for all quarters in 1972 and later years.

The columns of the normalized equipment and structures matrixes are multiplied by the current- and constant-dollar establishment-based industry expenditures derived in step one above, and the rows summed to yield current- and constant-dollar capital expenditures for each company-based industry. Current-dollar company-based capital expenditures are then divided by constant-dollar

company-based capital expenditures to yield implicit price deflators for equipment and for structures.

Step 3: Constant-dollar P&E survey estimates

Breakdowns of total expenditures into those for plant and for equipment have been collected in the P&E survey on an annual basis since 1947 and on a quarterly basis since 1972. Separate quarterly expenditure series for equipment and for plant are calculated for all quarters prior to 1972 by interpolation. Annual estimates for equipment and for plant reported in the P&E survey are used as control totals for each industry; company-based industry expenditures derived in step two are

used as interpolators. The company-based industry deflators from step 2 are constrained to insure that the weighted sum of the deflators for the P&E survey industries is equal to the deflator for total purchases of equipment and structures obtained from the sum of the adjusted NIPA estimates. Constant-dollar expenditures for 38 P&E survey industries are then calculated by dividing the current-dollar P&E survey expenditure estimates (for equipment and for plant separately) by the implicit price deflators for company-based industries. Constant-dollar industry estimates of total P&E expenditures are calculated by adding the separate estimates for constant-dollar equipment and plant expenditures.

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tion plan increases this year. The largest planned increase is in mining, 22 percent; mining reported the largest spending increase in nonmanufacturing last year, 18½ percent. "Communication and other" plans a 13½-percent increase; gas utilities, 10 percent; "other transportation," 7½ percent; and trade and services, 6½ percent. Railroads and electric utilities plan smaller increases. Air transportation plans a 10½-percent decline in spending this year.

Spending in nonmanufacturing industries increased 2 percent in the second quarter, to a seasonally adjusted annual rate of $191.2 billion, following a 3½-percent increase in the first quarter. Large increases in the second quarter in "other transportation," electric utilities, trade, and finance were partly offset by sizable declines in air transportation and real estate. A 1½-percent increase is planned in the third quarter; increases in the finance-insurance-real estate group and "communications and

other" are largely offset by declines in gas utilities and transportation industries. A 5½-percent increase is planned in the fourth quarter; the largest increases are in transportation and gas utilities.

Electric and gas utilities started new investment projects totaling $13.8 billion in the second quarter, compared with $10.1 billion in the first quarter. Carryover of utility projects was $135.6 billion at the end of June, up $4.3 billion from the end of March.